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LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XIII.

OF THE REFRACTIBILITY OF LIGHT.

THE natural progress of light, we have already seen, is in straight lines, yet it is found to be subject to the laws of attraction, as well as all other bodies; and, when under the impulse of that power, it is sometimes turned out of its direct course. This only happens when it passes out of one medium into another of a different density, as from air into water or glass, or from water or glass into air; and this property of light is called *refraction*. A very easy experiment will shew you what is meant by refraction; for if you put one end of a straight stick into water, it will appear at the surface as if it was broken, that is, *refracted*, from the Latin verb *refrango*, to break.

It is evident that this effect can only arise from the rays of light being drawn or attracted out of their direct course; and this I shall prove by a very common, and a very easy experiment. Put a shilling, or any other conspicuous but small object, into a basin or other vessel, and then retire to such a distance, as that the edge of the vessel shall just hide it from your sight. If, then, you remain motionless while the vessel is filled with water, you will find that the shilling will be rendered perfectly visible, though, in fact, neither you nor it have changed places in the slightest degree.

Let it be remembered, that it is only the *rays which fall obliquely that are thus refracted*; for a ray which falls perpendicularly is equally attracted on all sides, and therefore suf-

fers no refraction at all. To illustrate this by the experiment which has just been mentioned. You must know that it is by light reflected from it to your eye that any object is rendered visible. You see the shilling in the basin, therefore, by rays of light, which are reflected from its surface. Now the angle of incidence and the angle of reflexion are equal; and as you stand in an oblique direction to the shilling, you see it, while the basin is empty, by rays of light which fall upon it in a direction exactly as oblique as that in which your eye is situated towards it. The shilling then which before was hid from your sight is rendered visible by pouring in the water, because the rays of light, which serve to render it then visible, are bent out of their course. Thus the ray of light, AC , (fig. 1.) which passes obliquely from the air into water at C , instead of continuing its course to B , takes the direction Ca , and consequently an object at a would be rendered visible by rays proceeding in that direction, when they would not have touched it, had they proceeded in their direct course.

By this figure you will understand that the angle of refraction PCa is not so large as the angle of incidence pCA , but bears a certain proportion to it; and this proportion or ratio varies with respect to different mediums. Thus, when a ray passes from air into water, the angle of incidence is to that of refraction in the ratio of four to three; from air into glass as three to two; from air into diamond as five to two; and the contrary proportion holds in passing back again; as when light passes from water into air, the ratio is as three to four, &c. From all this you will clearly understand, that the more oblique a ray falls the greater is the refraction. It is also necessary that you should remember, that light is refracted or drawn towards the perpendicular (as in fig. 1.), when it passes out of a rare into a denser medium; and it is refracted from the perpendicular, or in a more oblique direction, when it passes from a dense medium into one which is rare; and the denser the medium, the greater is the refraction; thus the diamond is found to refract most powerfully.

This principle will explain several of the common phenomena of nature. Mr. Walker observes, that "many a
school-boy

school-boy has lost his life, by supposing the bottom of a clear river to be within his depth, as (when he stands on the bank) the bottom will appear one-fourth nearer the surface than it really is." Have you ever seen a skilful marksman shoot a fish in the water with a bullet? If you have, the sportsman could tell you, that he took his aim considerably (perhaps a foot) below the fish as it appeared, because it appeared much nearer the top of the water than it was. The distortion of objects through a wrinkled or crooked pane of glass, arises also from the unequal refraction of the rays that pass through it. When light passes out of pure space into air, it is also refracted; and therefore the sun is visible, by means of the refraction of our atmosphere, some minutes before he rises above the horizon in the morning, and some minutes after he sets below it in the evening. It has been calculated that, in looking through the common glass of a window, objects appear about one-thirtieth part of an inch out of their real place by means of the refraction.

But the most excellent use to which this principle has been applied, is the construction of optical glasses; for by grinding the glass thinner at the edges than in the middle, those rays of light, which would strike upon it in a straight line, or perpendicularly if it was plain, strike upon it obliquely, and consequently suffer a refraction, and are made to converge; and, on the contrary, by making the glass thinner in the middle than at the sides, the rays are refracted the contrary way, and are made to diverge. The former are called convex glasses, the latter concave.

The reason of this will be sufficiently evident, when I mention that all curves or segments of a circle are formed of a number of straight lines infinitely short, and inclining to each other like the stones in the arch of a bridge, or the bricks at the top of an arched window-frame. It is evident, therefore, that in fig. 2, where parallel rays are supposed to strike a surface of this form, those only which enter the middle part will go in a straight direction, whereas those which strike the sides will strike them obliquely, and will consequently be refracted. If the surface, then, was a perfect curve, as in fig. 3, it is plain that only the ray which strikes the center point of the curve will enter it in a straight

direction, and consequently all the rest which strike it obliquely will be more or less refracted, according to the degree of obliquity, and will consequently be made to converge.

Glasses are usually ground for optical purposes into seven different shapes (see fig. 4.). First, the glass may be flat on both sides, as the common pane of a window, No. 1. Or, secondly, it may be flat on one side and convex on the other, No. 2. Or, thirdly, it may be convex on both sides, like our ordinary reading-glasses, No. 3. Or, fourthly, it may be flat on one side and concave on the other, as No. 4. Fifthly, it may be concave on both sides, like the glasses near-sighted people generally use, as No. 5. Sixthly, it may be concave on one side and convex on the other, like the crystal of a watch, though not in such a degree, as No. 6; this is usually called a meniscus. Seventhly, it may have one side, which must be convex, ground into little facets, like those of some jewels, while the other side is plain. Children know it by the name of a multiplying-glass, as No. 7.

The effects of these different glasses will be easily understood from what has been premised. A ray entering the plain glass, No. 1, will indeed be refracted by the glass, but it will suffer another refraction on going out of it, which will rectify the former; the place of the object will, therefore, as was before stated, be a little altered, but its figure will remain unaltered.

If, again, several parallel rays enter the glass, No. 2, plain on one side and convex on the other, as in figure 3, they will be differently refracted, in proportion to the obliquity with which each of them falls upon the surface. The middle ray, for instance, which passes perpendicularly through, will not be refracted at all, but go on straight forward. All the other rays, however, will suffer refraction. The ray CE will be refracted upwards to F; the ray AD will be refracted downwards to the same point. There they will cross, and then go onward, diverging or separating from each other for ever; that which came from the bottom going upward, and that which came from the top downward. The figure given there is flat, but it must

be

be supposed round, the glass being represented edgewise. If so, therefore, the collected bundle of rays, passing through the glass, unite and form a cone, or a figure like a candle extinguisher, the bottom of which is at the glass, and the point at *F*. This point, as I once before had occasion to mention, is called the focus of the glass. From a calculation in deep geometry we learn, that the distance from this point is always equal to the diameter of the circle which the glass would make if its convexity was continued.

When the rays of the sun fall directly upon a glass *DE*, (see fig. 5.) equally convex on both sides, they will be refracted still more abruptly, and meet sooner in a point or principal focus at *f*. The distance of this focus is, we are informed by the same calculation, equal to the semi-diameter of the circle, which the convexity of the glass continued would make. Either this glass or the former, as they collect the rays of the sun into a point, will burn at that point, since the whole force of the rays is concentrated there. The broader the glass in these instruments, the greater will be its power.

It is to be observed, that it is only parallel rays, or those which proceed in a direct line to the surface of the glass, that are thus converged to a point or focus; the rays of the sun, however, come from so great a distance, that they are always regarded as parallel. Divergent rays, such as proceed from a point, as the flame of a candle, will be refracted-parallel. If, therefore, we place a candle exactly at a focal distance from one or both of these glasses, as at *f*, its rays will, upon going through the glass, all run parallel to each other. If the candle is placed nearer the glass than its focal distance, the rays, after passing through the glass, will no longer run parallel, but separate or diverge: if it is placed further off, the rays will then strike the glass more parallel, and will therefore, upon passing through it, converge or unite at some distance behind the glass.

After the rays have united or converged to a focus, they will cross each other, and form an inverted picture of the flame of the candle, as may be seen on a paper placed at the meeting of the rays behind! How the image is inverted, therefore, is easy to apprehend; for the upper rays, after re-

fraction, were such as came from the under part of the luminous body; and the under rays, on the contrary, came from its top: so that the rays are turned upside-down, and so consequently is the image. It is very pleasing to view a picture of this kind thus formed, each ray preserving the colour it had in the luminous object with the utmost imitative precision. The shadings of the little piece are far beyond the reach of art, and the design far more correct than that of the finest painter. I mention the candle as being an obvious luminary; but if any object whatever is placed at the proper distance from a convex glass, its picture will be, in the same manner, thrown behind, and may be received upon paper, or any other body in all its natural proportions and colourings. The nearer the natural object is to the refracting glass, the farther off will this picture be behind it; because, as was said before, the rays which form it do not then converge or unite, but at a great focal distance. The farther off the natural object is, the nearer will be the focal distance it makes, and consequently the nearer will be the picture behind the glass; for wherever the focus is, there will the perfect picture be. However, when the rays come from several objects at a moderate distance, they may then be considered as all parallel, and this difference of focus is then imperceptible.

To put what has been said in other words.—As the rays of the sun may be all considered as falling parallel upon every glass of the convex kind, so that they must always unite behind it in a focal point. As all the rays flowing from other objects are not always parallel, when placed too near the glass, they separate after refraction, and run off divergent; when placed at a proper distance, they unite or converge in a focal point, and there imprint a picture, if there is any thing properly placed to receive it, in which the natural figure will be represented, its motions, its colours, and shadings.

The whole of the foregoing theory may be demonstrated with a common reading-glass. If a candle is held so near it, as that the rays passing through shall strike the wainscot of the chamber with a bright spot, just as large as the glass itself, the candle is then at the focal distance; and rays, striking the

the glass divergently, are refracted through it, parallel to each other, neither spreading nor drawing together as they proceed. If the candle is held nearer than the focal distance, the rays will fall then more divergent upon the glass, and will consequently be refracted more divergent, so that they will form a very broad spot of light upon the wainscot. If the candle is placed at a much greater distance than the focus, the rays fall upon the glass more parallel, and consequently when they are refracted, will tend to unite and converge behind the glass, and will form but a small speck of vivid light on the wainscot. This speck, if closely examined, will appear a perfect picture of the candle.

Every visible point, in any body whatsoever, may be considered as a candle sending forth its rays, which split and *pencil* out into several other rays before they arrive at the eye. Each body is as if composed of an infinite number of splendid points or candles, each point with its own radiance, and diffusing itself on every side. Instead of one body, the eye, in fact, is impressed with thousands of radiant points sent out from that body, which being grouped at the bottom of the eye, imprint the picture of the object whence they flow. Each point sends forth its rays.

It is upon this principle the camera obscura is constructed. If we take a double convex glass, and adapt it so as to fit an hole in the window-shutter of a darkened chamber, so as that no light shall come into the room but through the glass; then let us place a sheet of white paper behind it at the proper distance, we shall thus have a camera obscura; for a picture of every external object will pass through the glass, and be painted upon the paper in the most beautiful colours that imagination can conceive, and all the motions of those objects also. It is necessary, in this experiment, that the window should not be opposite the sun; for then we should see no image but that of his brightness: and yet it is necessary also, that while we make the experiment, the sun should shine and illuminate the objects strongly, which are to paint themselves within. Without this strong illumination, the rays will be sent so feebly from every object, that we shall have but a faint picture, if any at all.

Painters and architects often make use of a similar contrivance to take a draught of landſhips or buildings: their glaſs is fixed in a box, and by means of a mirror, on which the objects fall, they are reflected upon oiled paper properly placed, upon which the artiſt ſketches his draught. With regard to the contours, or outlines, which this picture gives, nothing can be more exact; but, with regard to the ſhading and colouring, the artiſt can expect but little aſſiſtance from it: for, as the ſun is every moment altering its ſituation, ſo is the landſkip every moment varying its ſhade; and ſo ſwift is this ſucceſſion of new ſhade, that while the painter is copying one part of a ſhade, the other part is loſt, and a new ſhade is thrown upon ſome other object.

If ſuch a glaſs is ſo fitted to an hole in a dark lantern, ſo that little pictures, painted in tranſparent colours on pieces of glaſs, may be paſſed ſucceſſively along between the glaſs and the candle in the lantern, we ſhall thus have a magic lantern. The pictures, ſtriking the glaſs very divergent, will be refracted very divergent alſo, and will be painted upon the wall of the chamber in all their colours, as large as we pleaſe to make them; for the farther the wall is from the glaſs, the more room will the rays have to diverge. As theſe figures would be painted on the wall reverſed, if the picture was held upright, it is neceſſary to turn them upſide down, when we would exhibit the ſhadows on the wall erect.

In looking through a glaſs of this deſcription, that is, a convex or double convex lens, the objects which we look at will appear magnified; for it is a rule in optics, *that we ſee every thing in the direction of that line in which the rays approach us laſt*. When I come to treat of the eye the reaſon of this will be explained. Suffice it to ſay for the preſent, that the larger the angle under which any object is ſeen, the larger will any object appear. The convergence of the rays of the convex lens, therefore, enlarges greatly the angle of viſion, as muſt be evident if we continue the lines fD , fE , fF , and fG , in the direction to which they point, and therefore in proportion to the diſtance the appearance

of the objects will be enlarged. The common spectacle-glasses and reading-glasses are of this description.

The effects of the plano-concave and double concave lenses, No. 4 and 5, are directly opposite to those of the convex lenses; for the thick parts of these glasses, you see, are towards the edge, and therefore their attractive and refractive powers are not towards the centre, but towards the circumference. Parallel rays, therefore, striking one of these glasses are made to diverge, or are dispersed. Rays already divergent are rendered more so; and convergent rays are made less convergent. Hence objects seen through these glasses appear considerably smaller than they really are. To prove this, let *ab* (fig. 6.) represent an arrow, which would be seen by the eye, if no glass was between, by the convergent rays, *ca* and *db*; but if the concave lens *D* is interposed between the object and the eye, the line *ac* will be bent towards *g*, and the line *bd* will be bent towards *k*, and consequently both will be useless, as they do not enter the eye. The object then will be seen by the lines *ao* and *br*, which, on entering the glass, will be refracted, and bent in the directions *ac* and *rd*. According to the rule just now laid down, therefore, every object is seen along the line which enters the eye last. The arrow is seen according to the angle *or*, which is much smaller than the angle *ab*, consequently it will appear considerably diminished, and at the distance of *nm*.

The spectacles which are used by near or short-sighted persons consist of concave lenses; for the reason of short sight is, that the form of the eye being too convex, the rays are made to converge before they reach the optic nerve, and therefore the concave glass, causing a little divergence, assists this defect of sight. But this matter will be still further explained when we come to treat of vision.

The meniscus, No. 7, is properly like the crystal of a common watch, and it neither magnifies nor diminishes. Sometimes, however, it is made in the form of a crescent, that is, thickest in the middle, and in that case it acts like a double convex lens.

It is evident that all lenses, as to their surfaces, whether concave or convex, are segments of different circles, the radii

radii and diameters of which may vary almost to an infinite extent. The distance of the principal focus, or focus of parallel rays, that is, the point where all the parallel rays meet, as the point *f*, fig. 5, will vary in different lenses, according to their respective degrees of convexity. Hence when opticians speak of the radius of a lens, when they say it is three or six inches, they mean that the convex surface of the glass is that part of a circle, the radius (that is, half the diameter) of which is three or six inches. The axis of a lens is a straight line drawn through the center of its spherical surface.

The principal focus, or focus of parallel rays, in convex lenses, is ascertained (as was before intimated) upon mathematical principles. It may however be found with sufficient accuracy for common purposes, by holding a sheet of paper behind the glass, when exposed to the rays of the sun, and observing when the luminous spot is smallest, and when the paper begins to burn. Or when the focal length does not exceed three feet, it may be found by holding the glass at such a distance from the wall opposite a window sash, as that the sash may appear distinct upon the wall.

You will observe, that in a double convex lens the rays of light are twice refracted; first, on entering the convex surface of the dense medium, the glass; and, secondly, on going out of the same dense medium, and entering the rare medium, or the air, which, from the form of the glass, you know must present a concave surface. Now rays are equally converged by entering a convex surface of a dense medium, and a concave surface of a rarer medium. The focus of a double convex lens then is at only half the distance of the focus of one which has only one convex surface, that is, a plano-convex. The focus of a double convex lens, therefore, as you have already seen, fig. 5, is the length of the radius, or semi-diameter of that circle, which is formed by the convexity of either of its surfaces.

That branch of optics which respects the refrangibility of light, is usually called, dioptrics, from the Greek, *dia*, through, and *optomai*, to see; so that it means to see through.

Optics.

Fig. 1.

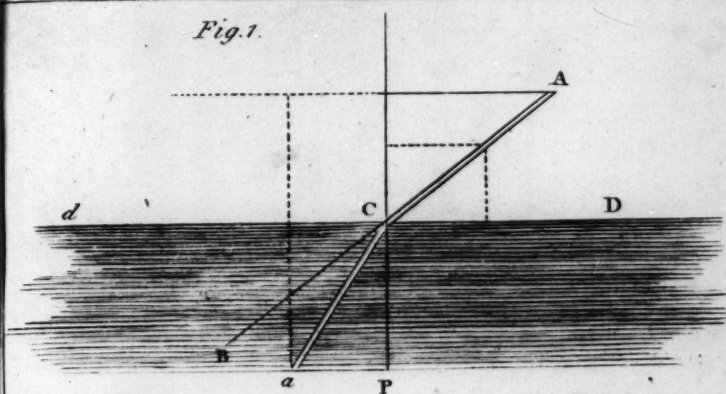


Fig. 2.

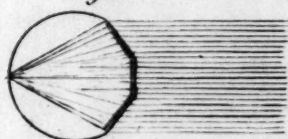


Fig. 3.

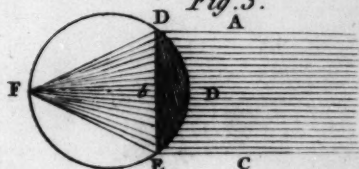


Fig. 4.



Fig. 5.

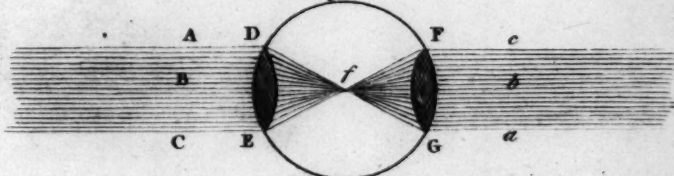
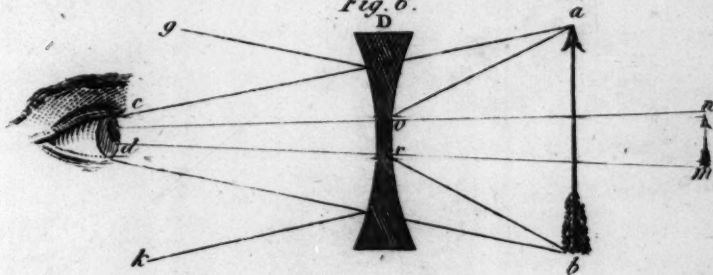
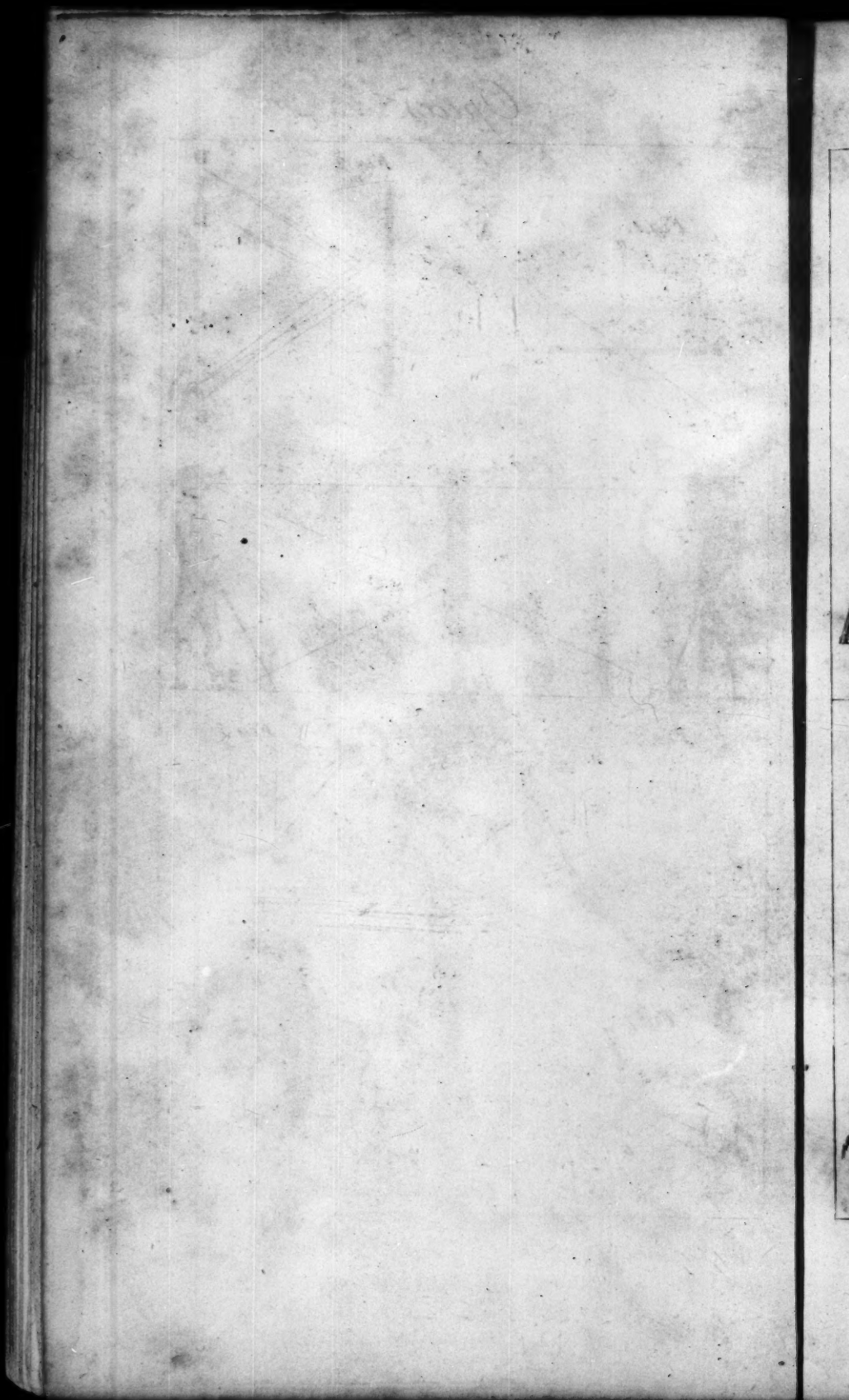
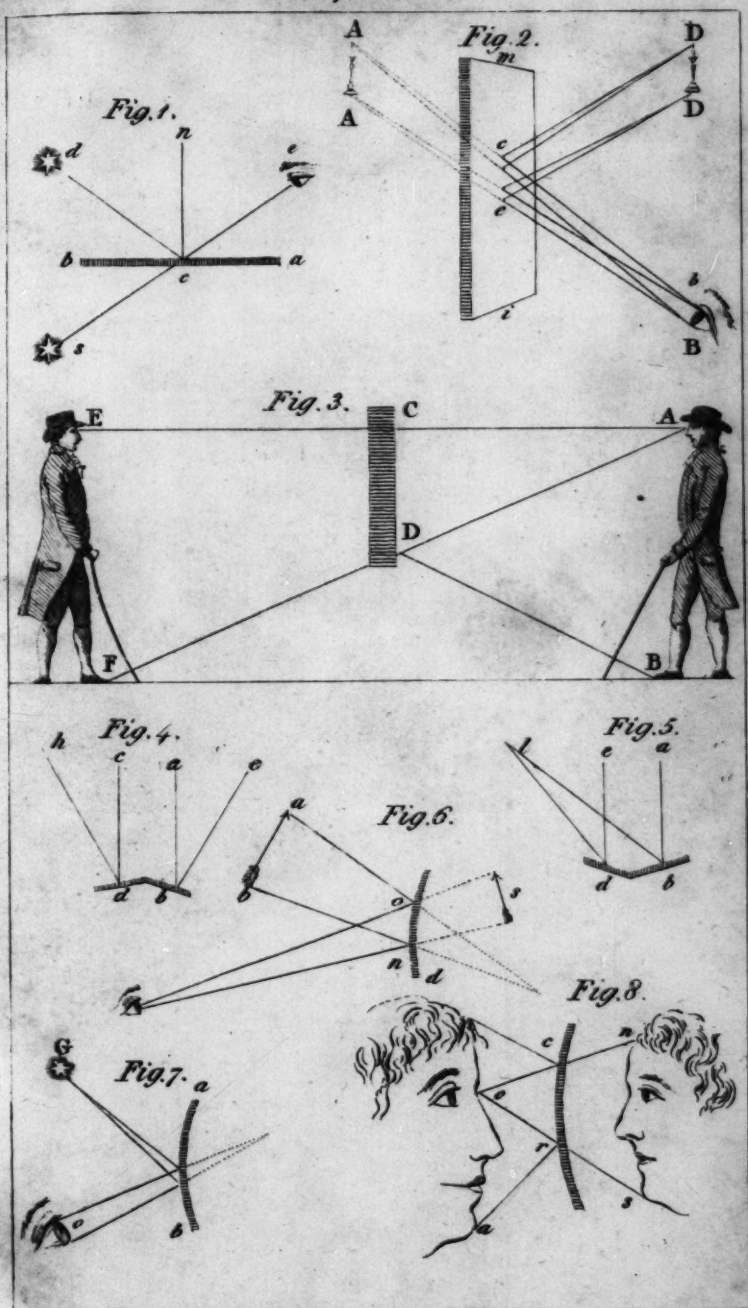


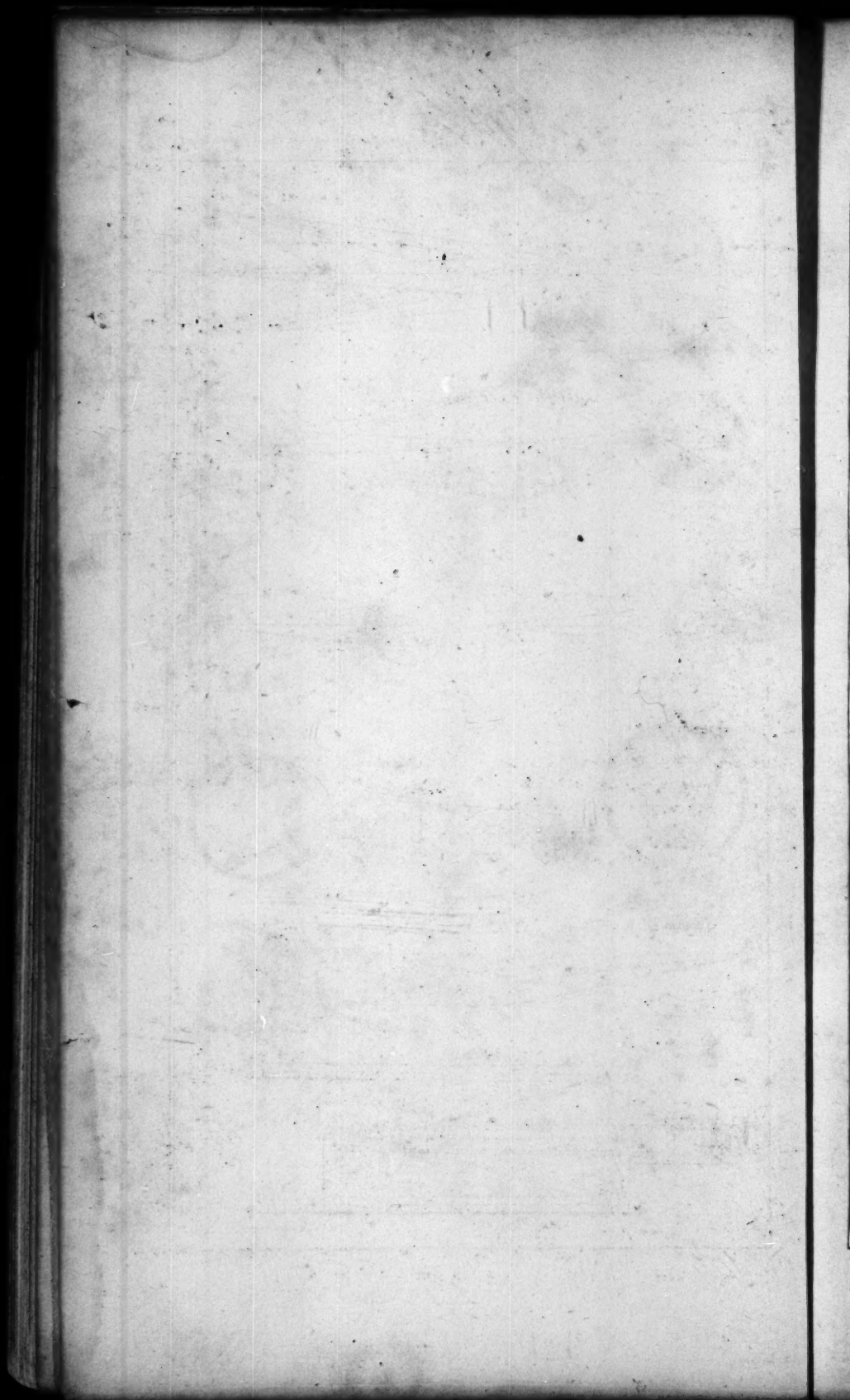
Fig. 6.



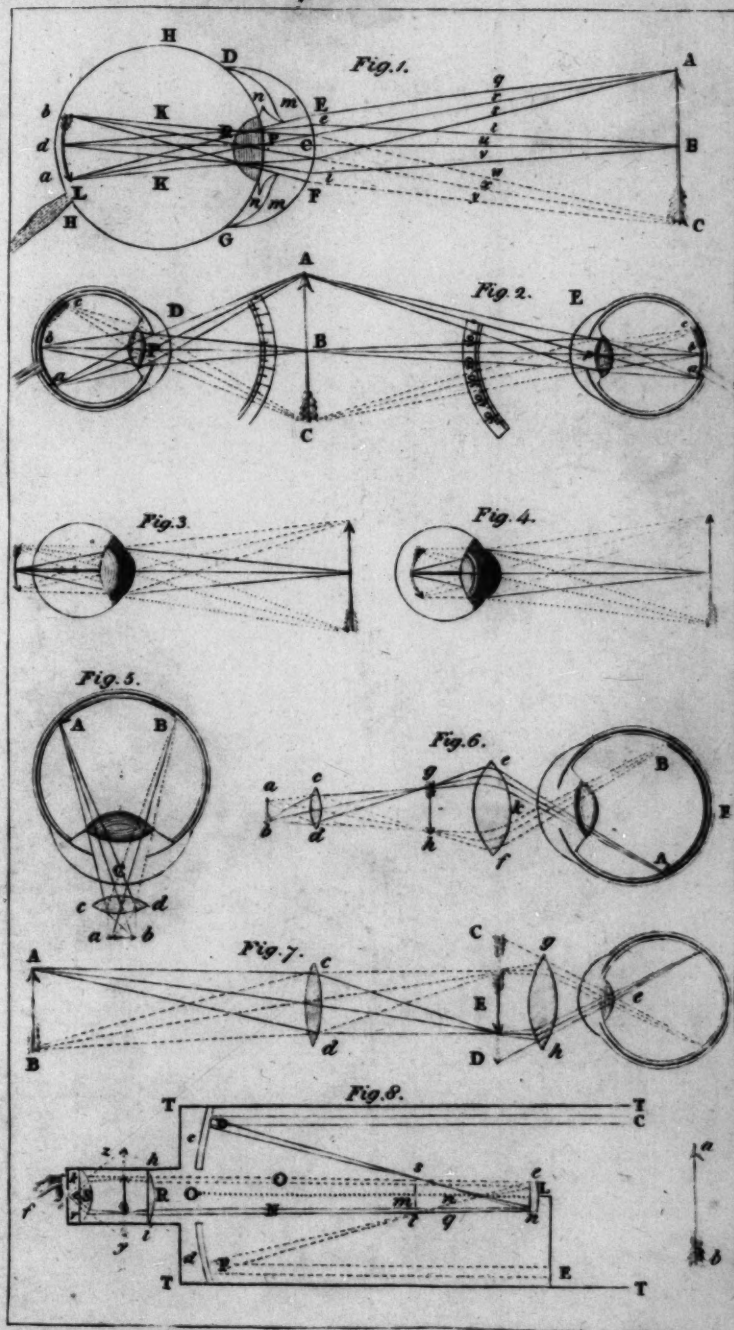


Optics.

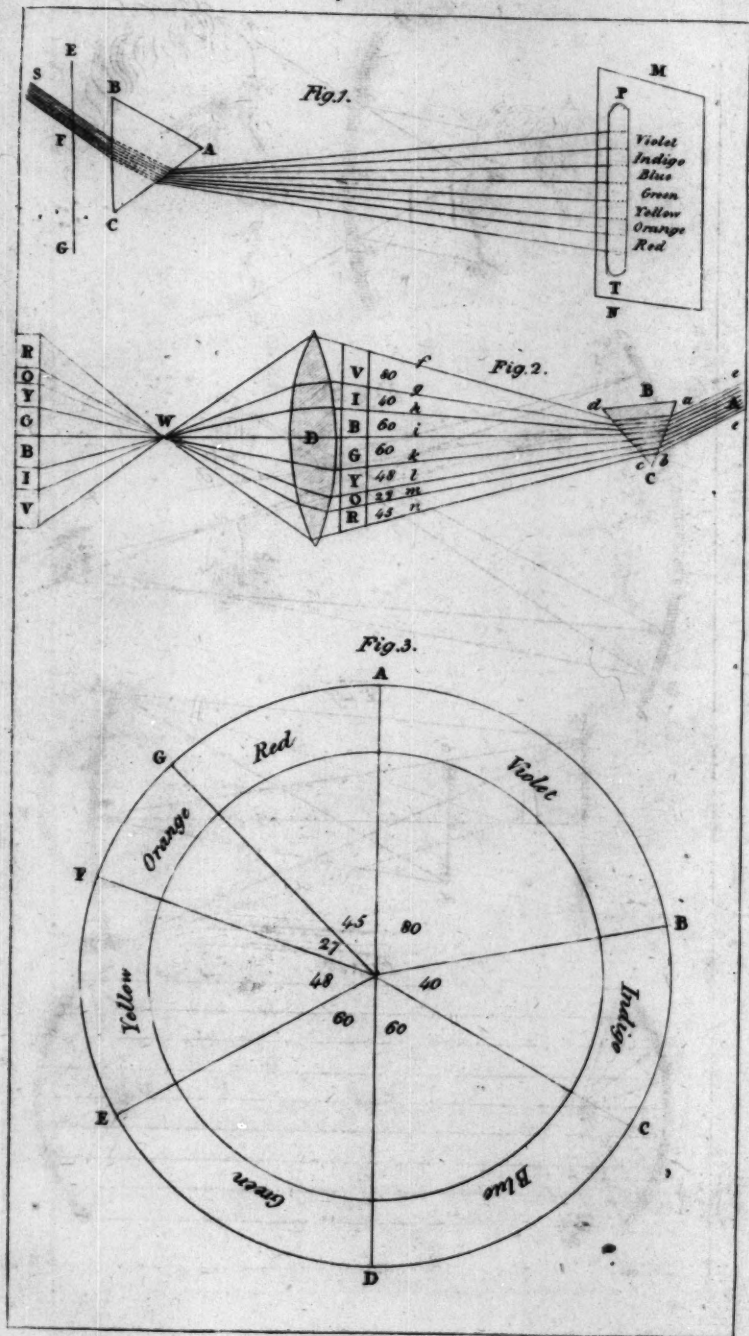




Optics.



Optics.



Optics.

Fig. 9.

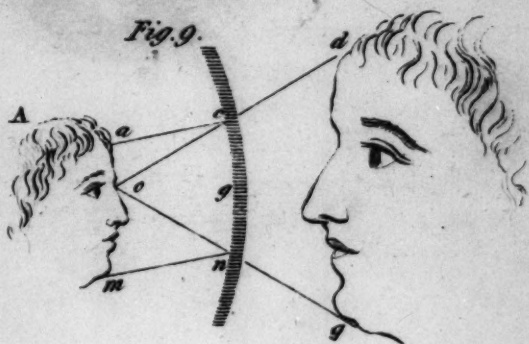


Fig. 10.

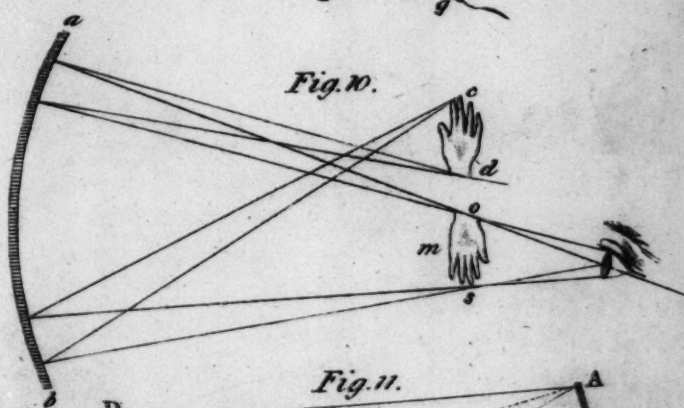


Fig. 11.

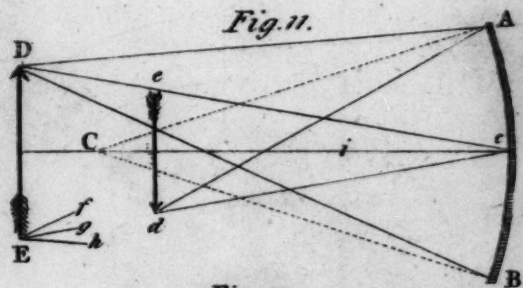
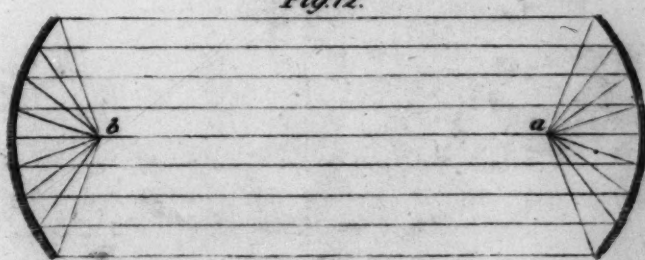
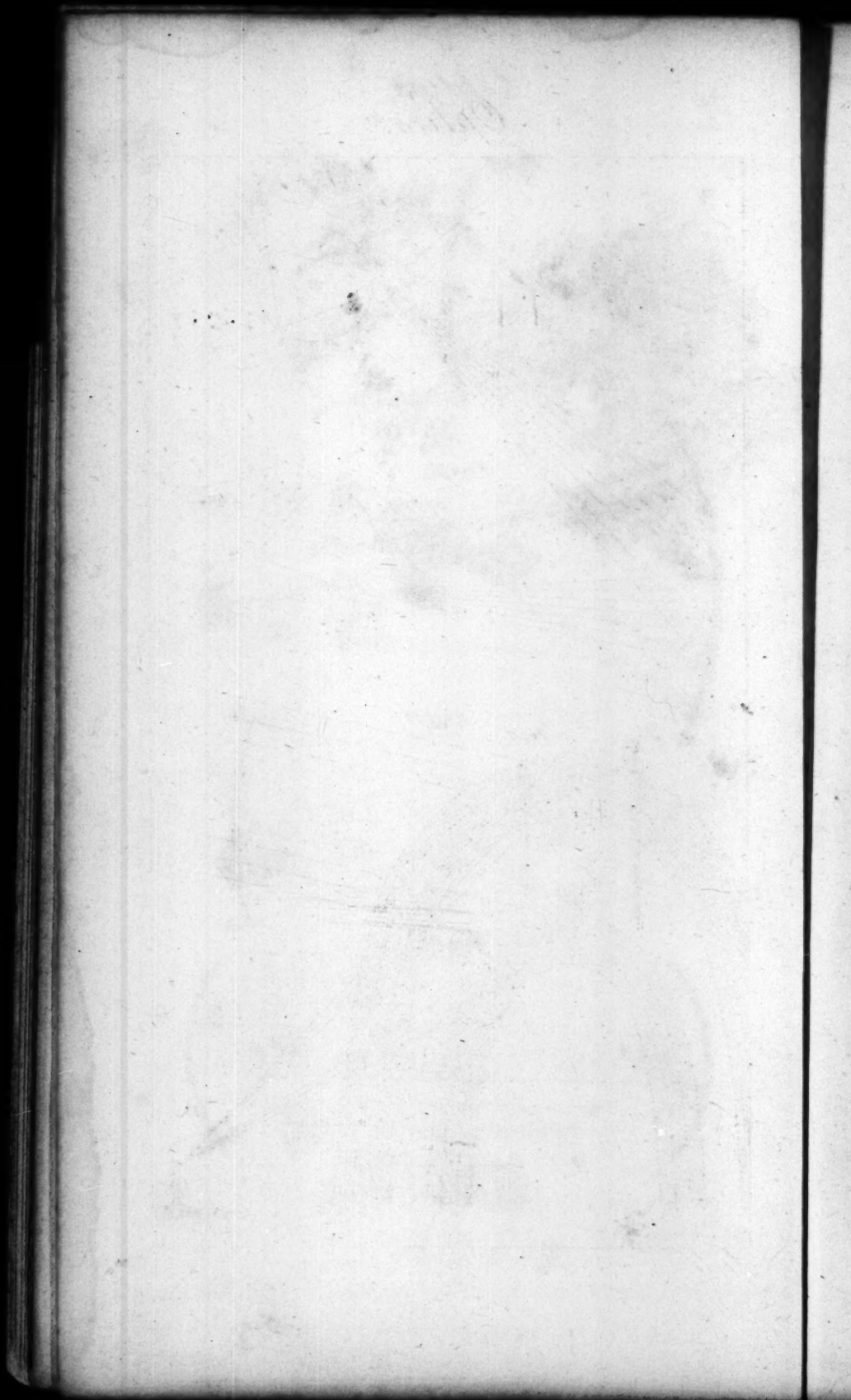
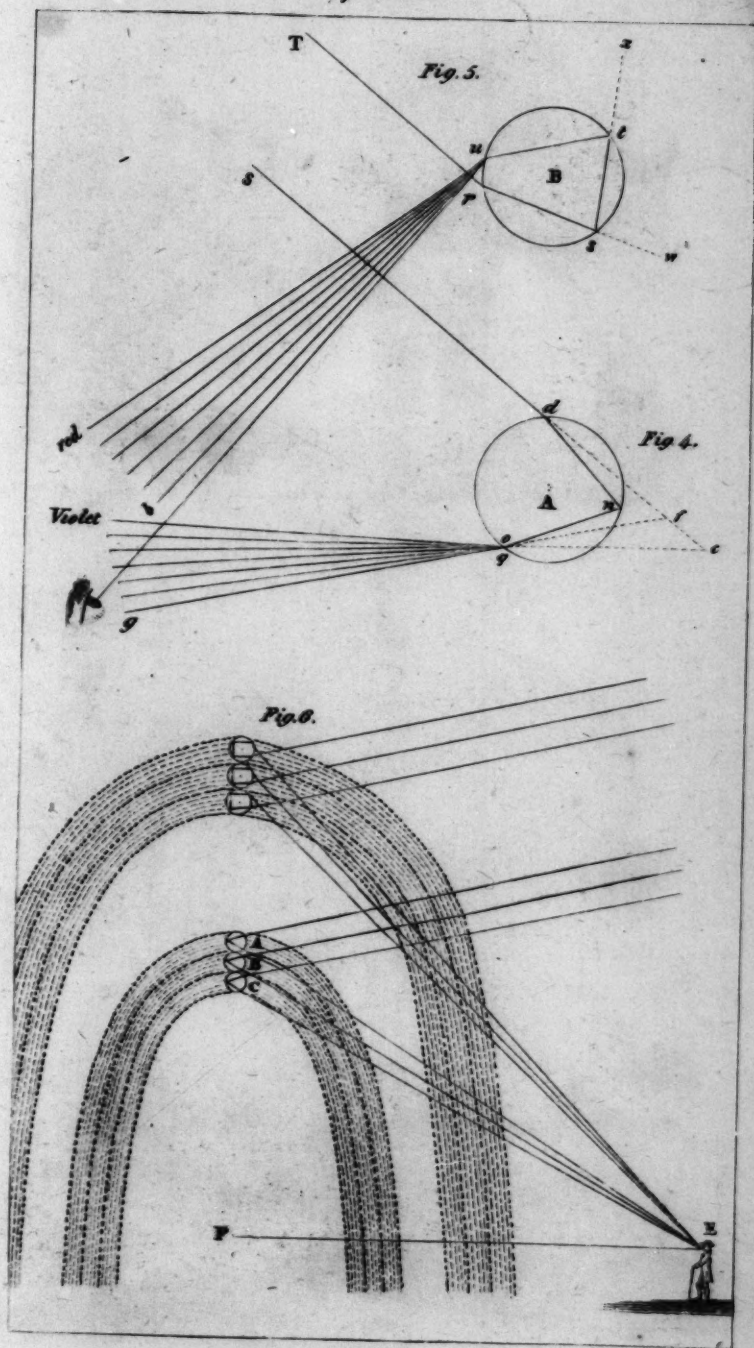


Fig. 12.





Optics.



Mechanics.

Fig. 1.



Fig. 2.

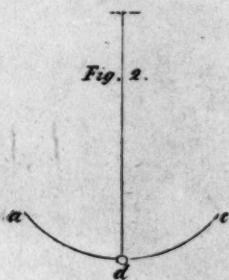


Fig. 3.

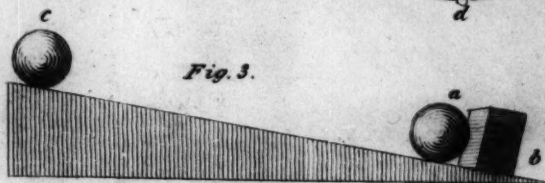


Fig. 4.

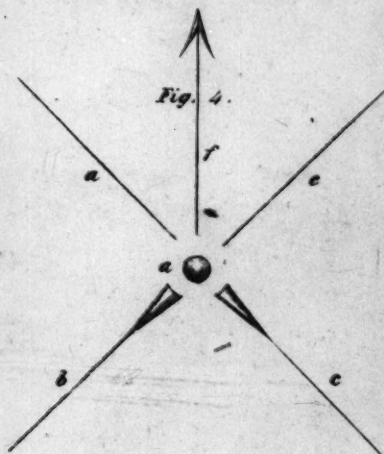
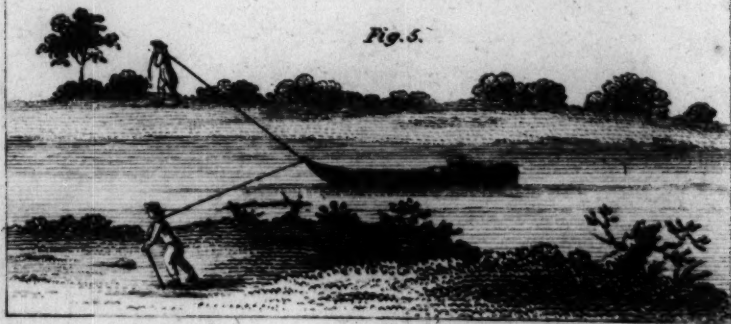
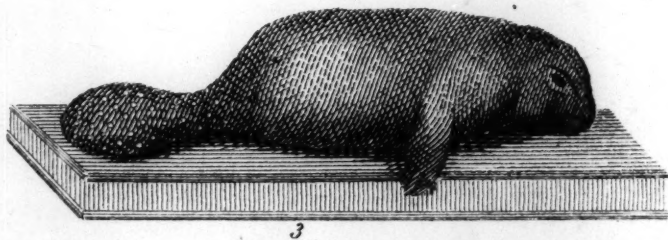
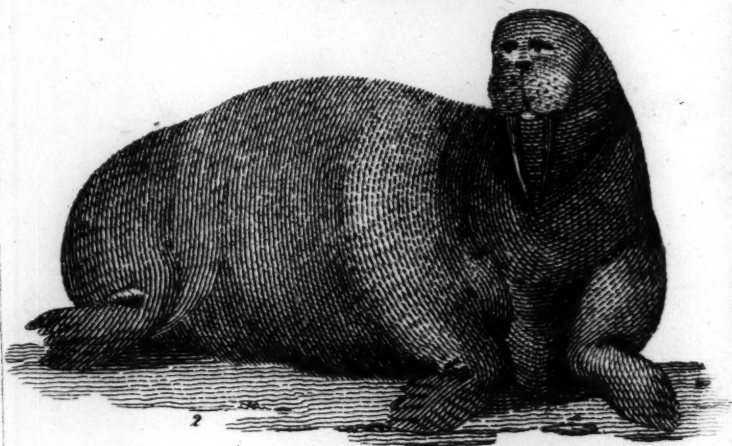
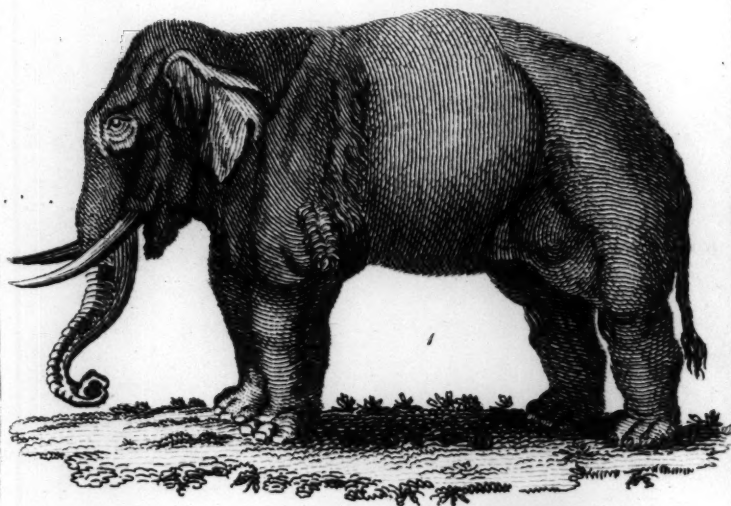


Fig. 5.





Natural History.



1. Elephant.

2. The Walrus.

[3. The Menati .

NATURAL HISTORY.

OF THE ELEPHANT.

THE next order in the class of mammalia, you will remember, is that of *bruta*, or animals which have no fore-teeth; and the first rank in the order is justly assigned to the elephant, which is not less remarkable for its size than its docility and understanding. All historians concur in giving it the character of the most sagacious animal next to man; and yet, were we to take our idea of its capacity from its outward appearance, we should be led to conceive very meanly of its abilities. The elephant, at first view, presents the spectator with an enormous mass of flesh that seems scarcely animated. Its huge body, covered with a callous hide, without hair; its large mis-shapen legs, that seem scarcely formed for motion; its little eyes, large ears, and long trunk; all give it an air of extreme stupidity. But our prejudices will soon subside when we come to examine its history; they will even serve to increase our surprise when we consider the various advantages it derives from so clumsy a conformation.

The elephant is seen from seven to no less than fifteen feet high. Whatever care we take to imagine a large animal beforehand, yet the first sight of this huge creature never fails to strike us with astonishment, and, in some measure, to exceed our idea. Having been used to smaller animals, we have scarcely any conception of its magnitude; for a moving column of flesh, fourteen feet high, is an object so utterly different from those we are constantly presented with, that to be conceived it must be actually seen.

It would, therefore, be impossible to give an idea of this animal's figure by a description; which, even assisted by the art of the engraver, will but confusedly represent the original. In general it may be observed, that the forehead is very high and rising, the ears very large and dependant, the eyes extremely small, the proboscis, or trunk, long, the body round and full, the back rising like an arch, and the whole animal short in proportion to its height. The feet are round at the bottom; on each foot there are five flat
horny

horny risings, which seem to be the extremities of the toes, but do not appear outwardly. The hide is without hair, full of scratches and scars, which it receives in its passage through thick woods and thorny places. At the end of the tail there is a tuft of hair, a foot and a half long. The female is less than the male, and the udder is between the fore-legs. But a more accurate, as well as a more entertaining description of the parts, will naturally occur in the history of their uses.

Of all quadrupeds the elephant is the strongest as well as the largest; and yet, in a state of nature, it is neither fierce nor formidable. Mild, peaceful, and brave, it never abuses its power or its strength, and only uses its force for its own protection, or that of its community. In its native deserts the elephant is seldom seen alone, but appears to be a social friendly creature. The oldest of the company conducts the band; that which is next in seniority brings up the rear. The young, the weak, and the sickly, fall into the center; while the females carry their young, and keep them from falling by means of their trunks. They maintain this order only in dangerous marches, or when they desire to feed in cultivated grounds. They move with less precaution in the forests and solitudes; but without ever separating or removing so far asunder as to be incapable of lending each other any requisite assistance. Nothing can be more formidable than a drove of elephants as they appear at a distance in an African landkip; wherever they march, the forests seem to fall before them; in their passage they bear down the branches upon which they feed; and, if they enter into an inclosure, they destroy all the labours of the husbandman in a very short time. Their invasions are the more disagreeable, as there is no means of repelling them; since it would require a small army to attack the whole drove when united. It now and then happens that one or two is found lingering behind the rest, and it is against these that the art and force of the hunters are united; but an attempt to molest the whole body would certainly be fatal. They go forward directly against him who offers the insult, strike him with their tusks, seize him with their trunks, sling him into the air, and then trample him to pieces under their

their feet. But they are thus dreadful only when offended, and do no manner of personal injury when suffered to feed without interruption. It is even said that they are mindful of injuries received, and, when once molested by man, seek all occasions for the future to be revenged; they smell him with their long trunks at a distance; follow him with all their speed upon the scent: and, though slow to appearance, they are soon able to come up with and destroy him.

In their natural state they delight to live along the sides of rivers, to keep in the deepest vales, to refresh themselves in the most shady forests and watery places. They cannot live far from the water; and they always disturb it before they drink. They often fill their trunk with it, either to cool that organ, or to divert themselves by spurting it out like a fountain. They are equally distressed by the extremes of heat and cold; and, to avoid the former, they frequently take shelter in the most obscure recesses of the forest, or often plunge into the water, and even swim from the continent into islands some leagues distant from the shore.

Their chief food is of the vegetable kind, for they loath all kind of animal diet. When one among their number happens to light upon a spot of good pasture, he calls the rest, and invites them to a share in the entertainment; but it must be a very copious pasture indeed that can supply the necessities of the whole band. As with their broad and heavy feet they sink deep wherever they go, they destroy much more than they devour; so that they are frequently obliged to change their quarters, and to migrate from one country to another. The Indians and Negroes, who are often incommoded by such visitants, do all they can to keep them away, making loud noises, and large fires round their cultivated grounds; but these precautions do not always succeed; the elephants often break through their fences, destroy their whole harvest, and overturn their little habitations. When they have satisfied themselves, and trod down or devoured whatever lay in their way, they then retreat into the woods in the same orderly manner in which they made their irruption.

Such are the habits of this animal considered in a social light; and, if we regard it as an individual, we shall find

its powers still more extraordinary. With a very awkward appearance, it possesses all the senses in great perfection, and is capable of applying them to more useful purposes than any other quadruped. The elephant, as we observed, has very small eyes, when compared to the enormous bulk of its body. But though their minuteness may at first sight appear deformed, yet, when we come to examine them, they are seen to exhibit a variety of expression, and to discover the various sensations with which it is moved. It turns them with attention and friendship to its master; it seems to reflect and deliberate; and as its passions slowly succeed each other, their various workings are distinctly seen.

The elephant is not less remarkable for its excellent hearing. Its ears are extremely large, and greater in proportion than even those of an ass. They are usually dependent; but it can readily raise and move them. They serve also to wipe its eyes, and to protect them against the dust and flies that might otherwise incommode them. It appears delighted with music, and very readily learns to beat time, to move in measure, and even to join its voice to the sound of the drum and the trumpet.

This animal's sense of smelling is not only exquisite, but it is in a great measure pleased with the same odours that delight mankind. The elephant gathers flowers with great pleasure and attention; it picks them up one by one, unites them into a nosegay, and seems charmed with the perfume. The orange flower seems to be particularly grateful both to its taste and smell; it strips the tree of all its verdure, and eats every part of it, even to the branches themselves. It seeks in the meadows the most odoriferous plants to feed upon; and in the woods it prefers the coco, the banana, the palm, and the sago tree, to all others. As the shoots of these are tender and filled with pith, it eats not only the leaves and the fruits, but even the branches, the trunk, and the whole plant to the very roots.

But it is in the sense of touching that this animal excels all others of the brute creation, and perhaps even man himself. The organ of this sense lies wholly in the trunk, which is an instrument peculiar to this animal, and that serves it
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for all the purposes of an hand. The trunk is, properly speaking, only the snout lengthened out to a great extent, hollow like a pipe, and ending in two openings, or nostrils, like those of a hog. An elephant of fourteen feet high has the trunk about eight feet long and five feet and an half in circumference at the mouth, where it is thickest. It is hollow all along, but with a partition running from one end of it to the other; so that though outwardly it appears like a single pipe, it is inwardly divided into two. This fleshy tube is composed of nerves and muscles, covered with a proper skin of a blackish colour, like that of the rest of the body. It is capable of being moved in every direction, of being lengthened and shortened, of being bent or straightened, so pliant as to embrace any body it is applied to, and yet so strong that nothing can be torne from the gripe. To aid the force of this grasp there are several little eminences, like a caterpillar's feet, on the underside of this instrument, which without doubt contribute to the sensibility of the touch as well as to the firmness of the hold. Through this trunk the animal breathes and smells, as through a tube; and at the very point of it, just above the nostrils, there is an extension of the skin, about five inches long, in the form of a finger, and which in fact answers all the purposes of one; for, with the rest of the extremity of the trunk, it is capable of assuming different forms at will, and consequently of being adapted to the minutest objects. By means of this the elephant can take a pin from the ground, untie the knots of a rope, unlock a door, and even write with a pen. "I have myself seen," says *Ælian*, "an elephant writing Latin characters on a board, in a very orderly manner, his keeper only shewing him the figure of each letter. While thus employed, the eyes might be observed studiously cast down upon the writing, and exhibiting an appearance of great skill and erudition." It sometimes happens that the object is too large for the trunk to grasp; in such a case the elephant makes use of another expedient as admirable as any of the former. It applies the extremity of the trunk to the surface of the object, and, sucking up its breath, lifts and sustains such a weight as the air in that case is capable of keeping suspended.

But though the elephant is thus admirably supplied by its trunk, yet, with respect to the rest of its conformation, it is unwieldy and helpless. The neck is so short that it can scarcely turn the head, and must wheel round in order to discover an enemy from behind. The hunters that attack it upon that quarter generally thus escape the effects of its indignation, and find time to renew their assaults while the elephant is turning to face them. The legs are indeed not so inflexible as the neck, yet they are very stiff, and bend not without difficulty. Those before seem to be longer than the hinder; but, upon being measured, are found to be something shorter. The joints, by which they bend, are nearly in the middle, like the knee of a man; and the great bulk which they are to support makes their flexure ungainly. While the elephant is young, it bends the legs to lie down or to rise; but when it grows old or sickly this is not performed without human assistance: and it becomes, consequently, so inconvenient, that the animal chooses to sleep standing. The feet, upon which these massy columns are supported, form a base scarcely broader than the legs they sustain. They are divided into five toes, which are covered beneath the skin, and none of which appear to the eye; a kind of protuberance like claws are only observed, which vary in number from three to five. The apparent claws vary; the internal toes are constantly the same. The sole of the foot is furnished with a skin as thick and hard as horn, and which completely covers the whole under part of the foot.

To the rest of the elephant's incumbrances may be added its enormous tusks, which are unserviceable for chewing, and are only weapons of defence. These, as the animal grows old, become so heavy, that it is sometimes obliged to make holes in the walls of its stall to rest them in, and ease itself of the fatigue of their support. It is well known to what an amazing size these tusks grow; they are two in number, proceeding from the upper jaw, and are sometimes found above six feet long. Some have supposed them to be rather the horns than the teeth of this animal; but, besides their greater similitude to bone than to horn, they have been indisputably found to grow from the upper jaw, and not
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from the frontal bones, as some have thought proper to assert. Some also have asserted, that these tusks are shed in the same manner as the stag sheds its horns; but it is very probable, from their solid consistence, and from their accidental defects, which often appears to be the effect of a slow decay, that they are as fixt as the teeth of other animals are generally found to be. Certain it is, that the elephant never sheds them in a domestic state, but keeps them till they become inconvenient and cumbrous to the last degree. An account of uses to which these teeth are applied, and the manner of choosing the best ivory, belongs rather to a history of the arts than of nature.

This animal is equally singular in other parts of its conformation; the lips and the tongue in other creatures serve to suck up and direct their drink or their food; but in the elephant they are totally inconvenient for such purposes; and it not only gathers its food with its trunk, but supplies itself with water by the same means. When it eats hay, it takes up a small whisp of it with the trunk, turns and shapes it with that instrument for some time, and then directs it into the mouth, where it is chewed by the great grinding teeth, that are large in proportion to the bulk of the animal. This packet, when chewed, is swallowed, and never ruminated again as in cows or sheep, the stomach and intestines of this creature more resembling those of a horse. Its manner of drinking is equally extraordinary. For this purpose the elephant dips the end of its trunk into the water, and sucks up just as much as fills that great fleshy tube completely. It then lifts up its head with the trunk full, and turning the point into its mouth, as if it intended to swallow trunk and all, it drives the point below the opening of the wind-pipe. The trunk being in this position, and still full of water, the elephant then blows strongly into it at the other end, which forces the water it contains into the throat, down which it is heard to pour with a loud gurgling noise, which continues till the whole is blown down.

The hide of the elephant is as remarkable as any other part. It is not covered over with hair as in the generality of quadrupeds, but is nearly bare. Here and there indeed a few bristles are seen growing in the scars and wrinkles of

the body, and very thinly scattered over the rest of the skin; but in general the head is dry, rough, and wrinkled, and resembling more the bark of an old tree than the skin of an animal. This grows thicker every year; and, by a constant addition of substance, it at length contracts that disorder well known by the name of the elephantiasis, or Arabian leprosy; a disease to which man, as well as the elephant, is often subject. In order to prevent this, the Indians rub the elephant with oil, and frequently bathe it to preserve its pliancy. To the inconveniences of this disorder is added another, arising from the great sensibility of those parts that are not callous. Upon these the flies settle in great abundance, and torment this animal unceasingly: to remedy which the elephant tries all its arts; uses not only its tail and trunk in the natural manner to keep them off, but even takes the branch of a tree, or a bundle of hay, to strike them off with. When this fails, it often gathers up the dust with its trunk, and thus covers all the sensible places. In this manner it has been seen to dust itself several times a day, and particularly upon leaving the bath.

Water is as necessary to this animal as food itself. When in a state of nature the elephant rarely quits the banks of the river, and often stands in water up to the belly. In a state of servitude the Indians take equal care to provide a proper supply; they wash it with great address; they give it all the conveniences for lending assistance to itself; they smooth the skin with a pumice-stone, and then rub it over with oils, essences, and odours.

It is not to be wondered at that an animal furnished with so many various advantages, both of strength, sagacity, and obedience, should be taken into the service of man. We accordingly find that the elephant, from time immemorial, has been employed either for the purposes of labour, of war, or of ostentation; to increase the grandeur of eastern princes, or to extend their dominions. But though these animals are most plentiful in Africa, it is only in Asia that the greatest elephants are found, and rendered subservient to human command. In Africa the largest do not exceed ten feet high; in Asia they are found from ten to fifteen. Their price increases in proportion to their size; and when they

they exceed a certain bulk, like jewels, their value then rises as the fancy is pleased to estimate.

The largest are entirely kept for the service of princes, and are maintained with the utmost magnificence, and at the greatest expence. The usual colour of the elephant is a dusky black, but some are said to be white; and the price of one of these is inestimable. Such a one is peculiarly appropriated for the monarch's own riding; he is kept in a palace, attended by the nobles, and almost adored by the people. Some have said that these white elephants are larger than the rest; others assert that they are less; and others still entirely doubt their existence.

As the art of war is but very little improved in Asia, there are few princes of the east who do not procure and maintain as many elephants as they are able, and place great confidence on their assistance in an engagement. For this purpose they are obliged to take them wild in their native forests, and tame them; for the elephant never breeds in a state of servitude; and though he has been reduced under the obedience of man for ages, the duration of pregnancy in the female still remains a secret. Aristotle, indeed, asserts, that she goes two years with young; that she continues to suckle her young for three years, and that she brings forth but one at a time. From authorities equally doubtful we learn, that the little one is about as large as a wild boar the instant it is brought forth; that its tusks do not yet appear; but that all the rest of its teeth are apparent; that, at the age of six months, it is as large as an ox, and its tusks pretty well grown; and that it continues, in this manner, for near thirty years advancing to maturity. In order to take them wild in the woods, a spot of ground is fixed upon, which is surrounded with a strong pallisade. This is made of the thickest and the strongest trees; and strengthened by cross bars, which give firmness to the whole. The posts are fixed at such distances from each other, that a man can easily pass between them, there being only one great passage left open, through which an elephant can easily come; and which is so contrived as to shut behind as soon as the beast is entered. To draw him into this inclosure, it is necessary first to find him out in the woods; and a female

male elephant is conducted along into the heart of the forest, where it is obliged by its keeper to cry out for the male. The male very readily answers the cry, and hastens to join her: which the keeper perceiving, obliges her to retreat, still repeating the same cry, until she leads the animal into the inclosure already described, which shuts the moment he is entered. Still, however, the female proceeds calling and inviting, while the male proceeds forward in the inclosure, which grows narrower all the way, and until the poor animal finds himself completely shut up, without the power of either advancing or retreating; the female, in the mean time, being let out by a private way, which she has been previously accustomed to. The wild elephant, upon seeing himself entrapped in this manner, instantly attempts to use violence. In the mean time the hunters, having fixed him with cords, attempt to soften his indignation, by throwing buckets of water upon him in great quantities, rubbing the body with leaves, and pouring oil down his ears. Soon after two tame elephants are brought, a male and a female, that caress the indignant animal with their trunks, while they still continue pouring water to refresh it. At last a tame elephant is brought forward, of that number which is employed in instructing the new comers, and an officer riding upon it, in order to shew the late captive that it has nothing to fear. The hunters then open the inclosure, and, while this creature leads the captive along, two more are joined on either side of it, and these compel it to submit. It is then tied by cords to a massy pillar provided for that purpose, and suffered to remain in that position for about a day and a night, until its indignation is wholly subsided. The next day it begins to be somewhat submissive; and, in a fortnight, is completely tamed like the rest. The females are taken when accompanying the males; they often come into these inclosures, and shortly after serve as decoys to the rest. But this method of taking the elephant differs, according to the abilities of the hunter; the negroes of Africa, who hunt this animal merely for its flesh, are content to take it in pitfalls; and often to pursue it in the defiles of a mountain, where it cannot easily turn, and so wound it from behind till it falls.

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The elephant, when once tamed, becomes the most gentle and obedient of all animals. It soon conceives an attachment for the person that attends it, caresses him, obeys him, and seems to anticipate his desires. In a short time it begins to comprehend several of the signs made to it, and even the different sounds of the voice; it perfectly distinguishes the tone of command from that of anger or approbation, and it acts accordingly. It is seldom deceived in its master's voice; it receives his orders with attention, and executes them with prudence, eagerly, yet without precipitation. All its motions are regulated; and its actions seem to partake of its magnitude, being grave, majestic, and secure. It is quickly taught to kneel down to receive its rider; it caresses those it knows with its trunk; with this it salutes such as it is ordered to distinguish, and with this, as with a hand, it helps to take up a part of its load. It suffers itself to be arrayed in harness, and seems to take a pleasure in the finery of its trappings. It draws either chariots, cannon, or shipping, with surprising strength and perseverance; and this with a seeming satisfaction, provided that it is not beaten without a cause, and that its master appears pleased with its exertions.

The elephant's conductor is usually mounted upon its neck, and makes use of a rod of iron to guide it, which is sometimes pointed, and at others bent into a hook. With this the animal is spurred forward, when dull or disobedient; but, in general, a word is sufficient to put the gentle creature into motion, especially when it is acquainted with its conductor. This acquaintance is often perfectly necessary; for the elephant frequently takes such an affection to its keeper, that it will obey no other; and it has been known to die for grief, when, in some sudden fit of madness, it has killed its conductor. We are told that one of these, that was used by the French forces in India for drawing their cannon, was promised, by the conductor, a reward for having performed some painful service; but, being disappointed of its expectations, it slew him in a fury. The conductor's wife, who was a spectator of this shocking scene, could not restrain her madness and despair; but running with her two children in her arms, threw them at the elephant's

elephant's feet, crying out, that since it had killed her husband, it might kill her and her children also. The elephant seeing the children at his feet, instantly stopped, and moderating its fury, took up the eldest with its trunk, and placing him upon its neck, adopted him for its conductor, and obeyed him ever after with great punctuality.

But it is not for drawing burthens alone that the elephants are serviceable in war; they are often brought into the ranks, and compelled to fight in the most dangerous parts of the field of battle. There was a time, indeed, in India, when they were more used in war than at present: when led into the field of battle, they are armed before with coats of mail, and loaded on the back each with a square tower, containing from five combatants to seven. Upon its neck sits the conductor, who goads the animal into the thickest ranks, and encourages it to increase the devastation: wherever it goes nothing can withstand its fury; it levels the ranks with its immense bulk, flings such as oppose it into the air, or crushes them to death under its feet. In the mean time those who are placed upon its back combat as from an eminence, and fling down their weapons with double force, their weight being added to their velocity. Nothing, therefore, can be more dreadful or more irresistible than such a moving machine to men unacquainted with the modern arts of war; the elephant, thus armed and conducted, raging in the midst of a field of battle, inspires more terror than even those machines that destroy at a distance, and are often most fatal when most unseen. But this method of combating is rather formidable than effectual: polished nations have ever been victorious over those semi-barbarous troops that have called in the elephant to their assistance, or attempted to gain a victory by merely astonishing their opposers. The Romans quickly learned the art of opening their ranks to admit the elephant, and thus separating it from assistance, quickly compelled its conductors to calm the animal's fury, and to submit. It sometimes also happened that the elephant became impatient of control, and, instead of obeying its conductor, turned upon those forces it was employed to assist. In either case there was a great deal of preparation to very little

little effect; for a single elephant is known to consume as much as forty men in a day.

The strength of an elephant is equal to its bulk, for it can, with great ease, draw a load that six horses could not remove: it can readily carry upon its back three or four thousand weight; upon its tusks alone it can support near a thousand: its force may also be estimated from the velocity of its motion, compared to the mass of its body. It can go, in its ordinary pace, as fast as a horse at an easy trot; and, when pushed, it can move as swiftly as a horse at full gallop. It can travel with ease fifty or sixty miles a day; and when hard pressed, almost double that distance. It may be heard trotting on at a great distance; it is easy also to follow it by the track, which is deeply impressed on the ground, and from fifteen to eighteen inches in diameter.

In India they are also put to other very disagreeable offices; for in some courts of the more barbarous princes, they are used as executioners; and this horrid task they perform with great dexterity: with their trunks they are seen to break every limb of the criminal at the word of command; they sometimes trample him to death, and sometimes impale him on their enormous tusks, as directed. In this the elephant is rather the servant of a cruel master than a voluntary tyrant, since no other animal of the forest is so naturally benevolent and gentle; equally mindful of benefits as sensible of neglect, he contracts a friendship for his keeper, and obeys him even beyond his capacity.

In India, where they were at one time employed in launching ships, a particular elephant was directed to force a very large vessel into the water: the work proved superior to its strength, but not to its endeavours; which, however, the keeper affected to despise. "Take away," says he, "that lazy beast, and bring another better fitted for service." The poor animal instantly upon this redoubled its efforts, fractured its skull, and died upon the spot.

In Delhi an elephant, passing along the streets, put his trunk into a taylor's shop, where several people were at work. One of the persons of the shop, desirous of some amusement, pricked the animal's trunk with his needle, and seemed highly delighted with this slight punishment.

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The elephant, however, passed on without any immediate signs of resentment; but coming to a puddle of dirty water, he filled his trunk, returned to the shop, and spurted the contents over all the finery upon which the taylor's were then employed.

An elephant in Adsmeer, which often passed through the bazar or market, as he went by a certain herb-woman, always received from her a mouthful of greens. Being one day seized with a periodical fit of madness, he broke his fetters, and, running through the market, put the crowd to flight, and, among others, this woman, who, in her haste, forgot a little child at her stall. The elephant recollecting the spot where his benefactress was accustomed to sit, took up the infant gently in his trunk, and conveyed it to a place of safety.

At the Cape of Good Hope it is customary to hunt those animals for the sake of their teeth. Three horsemen, well mounted, and armed with lances, attack the elephant alternately, each relieving the other, as they see their companion pressed, till the beast is subdued. Three Dutchmen, brothers, who had made large fortunes by this business, determined to retire to Europe, and enjoy the fruits of their labours; but they resolved, one day before they went, to have a last chace, by way of amusement: they met with their game, and began their attack in the usual manner; but, unfortunately, one of their horses falling, happened to fling his rider; the enraged elephant instantly seized the unhappy huntsman with his trunk, flung him up to a vast height in the air, and received him upon one of his tusks as he fell; and then turning towards the other two brothers, as if it were with an aspect of revenge and insult, held out to them the impaled wretch, writhing in the agonies of death.

The teeth of the elephant are what produces the great enmity between him and mankind; but whether they are shed, like the horns of the deer, or whether the animal is killed to obtain them, is not yet perfectly known. All we have as yet certain, is, that the natives of Africa, whence almost all our ivory comes, assure us, that they find the greatest part of it in their forests; nor would, say they, the
teeth

teeth of an elephant recompense them for their trouble and danger in killing it : notwithstanding, the elephants which are tamed by man are never known to shed their tusks ; and, from the hardness of their substance, they seem no way analogous to deer's horns.

The teeth of the elephant are very often found in a fossil state. Some years ago two great grinding-teeth, and part of the tusk of an elephant, were discovered, at the depth of forty-two yards, in a lead-mine in Flintshire.

The tusks of the mammoth, so often found fossil in Siberia, and which are converted to the purposes of ivory, are generally supposed to belong to the elephant : however, the animal must have been much larger in that country than it is found at present, as those tusks are often known to weigh four hundred pounds ; while those that come from Africa seldom exceed two hundred and fifty. These enormous tusks are found lodged in the sandy banks of the Siberian rivers ; and the natives pretend that they belong to an animal which is four times as large as the elephant.

There have lately been discovered several enormous skeletons, five or six feet beneath the surface, on the banks of the Ohio, not remote from the river Miame in America, seven hundred miles from the sea-coast. Some of the tusks are near seven feet long ; one foot nine inches in circumference at the base, and one foot near the point ; the cavity at the root or base nineteen inches deep. Besides their size there are yet other differences : the tusks of the true elephant have sometimes a very slight lateral bend ; these have a larger twist, or spiral curve, towards the smaller end : but the great and specific difference consists in the shape of the grinding-teeth, which, in these newly found, are fashioned like the teeth of a carnivorous animal ; not flat and ribbed transversely on their surface, like those of the modern elephant, but furnished with a double row of high and conic processes, as if intended to masticate, not to grind their food. A third difference is in the thigh bone, which is of a great disproportionable thickness to that of the elephant ; and has also some other anatomical variations. These fossil bones have been also found in Peru and the Brazils ; and, when cut and polished by the workers in ivory, appear, in

every respect, similar. It is the opinion of Doctor Hunter that they must have belonged to a larger animal than the elephant; and differing from it in being carnivorous. But as yet this formidable creature has evaded our search; and if, indeed, such an animal exists, it is happy for man that it keeps at a distance; since what ravage might not be expected from a creature, endued with more than the strength of the elephant, and all the rapacity of the tiger!

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XIII.

THE LIFE OF ANN BAYNARD.

THIS learned and excellent woman was born at Preston in Lancashire, in the year 1672. She was the only child of Dr. Edward Baynard, a respectable and ingenious physician, who, observing her uncommon genius, bestowed upon her a liberal education, which she improved to the noblest purpose. Her acquaintance with the Latin and Greek classics was intimate and extensive; and she wrote several pieces in the former language which were distinguished by their purity and elegance. With the works of St. Chrysostom, one of the finest and most difficult of the Greek fathers, she was very familiar. Dr. Baynard was greatly attached to the mathematical sciences, particularly astronomy, and from him she acquired a considerable knowledge of that sublime study, which, as she had the noblest sentiments of religion, served to heighten her love and admiration of the great Creator.

With all these various and solid endowments, she possessed an extraordinary degree of humility, and would often say, in the devout language of the apostle, "I count all things but loss for the excellency of the knowledge of Jesus Christ my Lord," in which superior wisdom she was also no mean proficient.

How truly beautiful do eminent learning and genius appear when thus sanctioned by a pious disposition! This was strikingly exemplified in the excellent young lady of whom

whom we are now speaking, it being her ordinary observation, "that human learning was worth nothing, unless as an handmaid it led to the knowledge of Christ revealed in the Gospel, as our only Lord and Saviour."

Some other judicious remarks of her's have been preserved, and while they evince the brightness of her understanding, they shew no less an extraordinary spirit of humility. "What avails," she would say, "Solomon's skill in all the works of Nature, if by them we are not brought to see the God of Nature? What is it to be so skilful in astronomy, or the knowledge of the heavens, as that we can foretell things to come [i. e. eclipses of the celestial bodies and returns of comets] if we never study by our holy practice to arrive at those blessed regions? What is it to be so skilful in arithmetic, as that we can divide and subdivide to the smallest fractions, if, as God hath revealed unto us in his holy word, we do not *so learn to number our days, that we may apply our hearts unto his wisdom*? What is it for a physician to be so skilful in foreseeing and preventing the diseases of the body, if, as God hath revealed unto him, he knows not where to find that *balm of Gilead*, the wine and oil of that Samaritan, the Lord Jesus Christ, to pour into the festered wounds of his own soul and conscience?"

As further evidences of her great piety, she constantly attended on public worship and the sacrament of the Lord's Supper, never absenting herself from the house of God, except in the case of sickness, with which at the close of her life she was much afflicted. Nor were her private devotions less regular than those which were public, and she eagerly embraced every opportunity of retirement, that she might have the better intercourse with heaven, as knowing that the surest way of overcoming the world, and living above it, was to withdraw herself occasionally from it. Nothing, indeed, is so well calculated to fit us for the social duties and the right conduct of life, as seasons of retirement for reflection and meditation. This has been the practice of the best and wisest persons in all ages and of all countries. It was the custom of the patriarch Isaac, we are told, "to go out into the field to meditate," that by contemplating the works of Nature without interruption, he

might have his mind composed and elevated to the Author of all things. Our blessed Saviour was much in the habit of retirement, when he could properly withdraw from the multitude; and herein he has been followed by genuine Christians in every period. The pious young lady, whose pattern we are now recommending, at an age when most of her sex indulge themselves in all the gaiety and folly of the world, courted privacy and solitude, that she might cultivate her understanding, and have her mind fitted for eternity.

We should not do justice to her character were we to pass over her disposition to charity. Her bounty, indeed, could not be large as to the extent and quantity of it, because her circumstances were contracted; but it was truly so, considering the cheerfulness with which she bestowed her alms upon distressed objects, and the straitness to which she often reduced herself, that she might relieve the wants of others. It was likewise her custom, whatever her allowance might be, to set apart a certain portion of it for pious and benevolent uses. But her charity did not stop here, or confine itself to the bodily wants of mankind, for, knowing the inestimable worth of the human soul, she felt a generous concern and pious grief at the errors, follies, and vices of the age, and her mind was greatly distressed at the bad conduct of many of those who had called themselves Christians. For young persons she had a most tender regard, and was very desirous of leading all whom she knew into the same honourable and righteous path in which she herself walked with so much lustre. But there was nothing formal, austere, or forbidding in her conversation and behaviour; for true religion is cheerful and exhilarating, and "wisdom's ways are those of pleasantness and peace." She recommended learning and piety to others by the sweetness of her temper, and the condescending affability of her discourse and behaviour. The minister who preached her funeral sermon, and from which discourse the principal part of this imperfect sketch is extracted, has given the following interesting account of her last observations. "That I may not be thought to flourish," says he, "be pleased to understand that she desired me, on her death-bed, that I would
exhort

exhort all young people to the study of wisdom and knowledge, as the means to improve their virtue, and bring them to the truest happiness; and this, I think, I cannot do better than in the words which were taken from her own mouth, just upon her departure, when her soul was hovering upon her lips, ready to take wing for that other world. Her words were these, which were faithfully penned down, and delivered into my own hands.

"I desire," says she, "that all young people may be exhorted to the practice of virtue, and to increase their knowledge by the study of philosophy; and more especially to read the great book of nature, wherein they may see the wisdom and power of the great Creator in the order of the universe, and in the production and preservation of all things. It will fix in their minds a love to so much perfection, frame a divine idea, and an awful regard of God, which will heighten devotion, lower the spirit of pride, and give an habit and disposition to his service. It will make us tremble at folly and profaneness, and command reverence and prostration to his great and holy name.

"That women," says she, "are capable of such improvements as will better their judgments and understandings, is past all doubt, would they but set to it in earnest, and spend but half of that time in study and thinking, which they do in visits, vanity, and folly. It would introduce a composure of mind, and lay a solid basis and groundwork for wisdom and knowledge, by which they would be better enabled to serve God, and help their neighbours."

After giving this account, and reporting this valuable advice, the author of the discourse expresses his regret at not having had a larger acquaintance with her: "I should then," says he, "have learned much more from her; I should, as the wise man speaks of wisdom in general, have attended to her wisdom, and bowed my ear to her understanding."

It might seem a misfortune to the world that a person of such gifts and virtues should be snatched off in the prime of life; but the ways of Providence are inscrutable. Her example, however, is left upon record, and

we trust that many of our young readers will be stimulated by it to study the ways of wisdom and holiness, that their memories may, in like manner, be blessed by posterity.

She died at Barnes, in Surry, June 12th, 1697; and lies buried in the church-yard of that parish, under a monument, which bears the following inscription:

Ann Baynard obiit
Jun. 12. Ann: Ætat: suæ 25
Christi 1697:
O mortales! quotus quisque vestrum cogitat,
Ex hoc momento pendet æternitas.

That is,

Ann Baynard died on the 12th of June, in the 25th year of her age, and of Christ 1697.

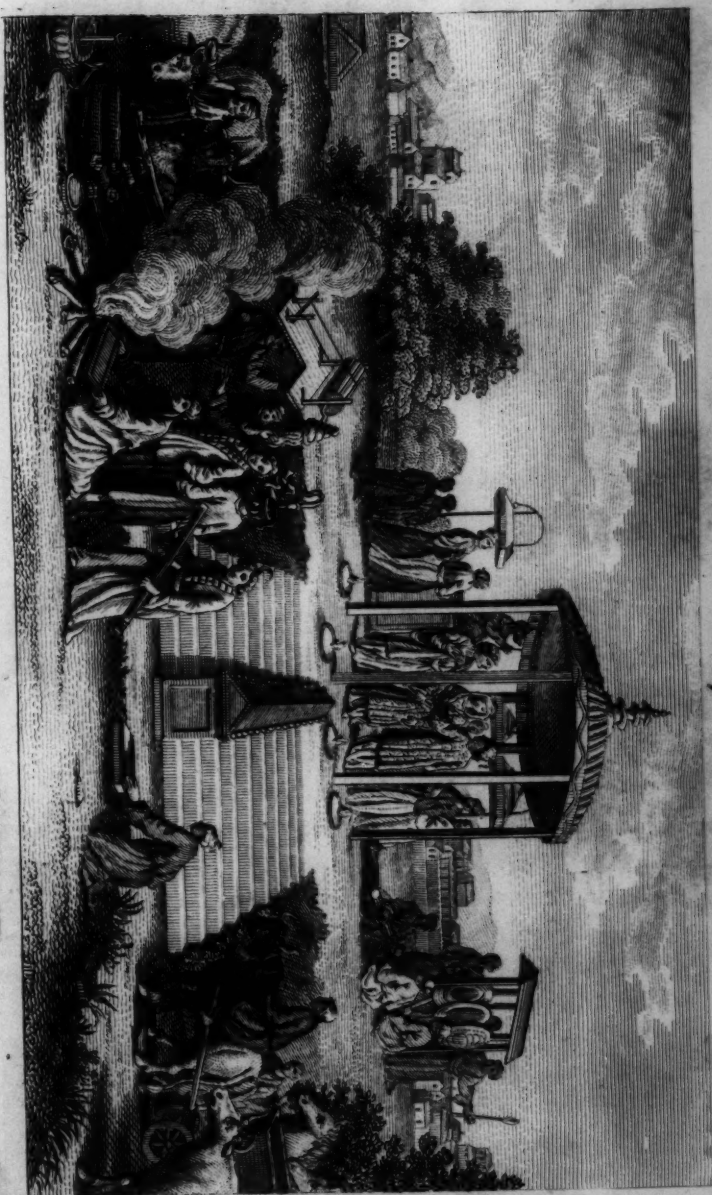
Mortals! how few among your race,
Have given this thought its weight;
That on this slender moment hangs
Your everlasting state!

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF JAPAN.

(Concluded from page 361. vol. II.)

ALTHOUGH the Chinese affirm that Japan was peopled from their country, yet the language of the island is perfectly distinct from that of the continent; neither have the written characters of the Chinese any resemblance to those made use of by the inhabitants of Japan. There is, however, a certain mode of writing which is common to the studious and learned of China, Japan, Korea, and Tonquin. In this character their books of learning and science are written, which are read and understood by each of the four nations; and it seems to approach to a general language, which has been so long and earnestly sought after by Europeans without success. They write with pencils; and a person who can contract much matter into a small space is greatly esteemed amongst them; for such are employed



THE CEREMONY OF A JAPANESE MARRIAGE.

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ployed to write letters and petitions to persons of rank and distinction. In their calculations they use small pellets stuck upon little sticks upon a board; with these they perform the fundamental rules of arithmetic with facility and a great degree of certainty.

They have a variety of books and some libraries, though the great mass of the people are extremely illiterate. The *diari*, or spiritual emperor, compiles the annals of the country. The other books are chiefly written by himself or his lords and gentlemen, who are honoured with titles according to their respective merit, without any regard to hereditary distinctions: and it sometimes happens that persons of the highest rank are by their weakness and folly degraded and treated with contempt. These grandees have no connection with the inferior classes of the people; their dwellings join each other, but are completely detached from those inhabited by the vulgar. Many of them, indeed, esteem themselves more noble than the emperor himself, and are dignified with higher and more honourable titles than their sovereign.

The supreme magistrate of Japan is styled emperor, with respect to a number of kings and princes who are subject to him. He is sovereign lord and owner of all the land, and has the power of punishing his offending lords and princes, either by banishment or death, according to his own pleasure. Jeddo, the imperial city where his majesty resides, is the metropolis of Japan, and is about nine miles in length and six in breadth. The city is entirely open on all sides; but the palace, the circuit of which is about six miles in length, is strongly fortified, and encompassed with three moats and three counterescarps. Within the first circumference is the habitation of the emperor, beautified and adorned with great splendor, and containing the dwellings of his women. The second circumference is inhabited by the princes of the blood and those of his council. The third is the residence of the several kings, dukes, and lords of Japan. The chiefs of lesser note have their houses without the third round, each being fitted up according to the dignity and wealth of the owners; almost all of them are gilt, so that the whole edifice appears at a distance not unlike

like what we may conceive the appearance of a mountain of gold would be.

The court, though very extensive, seems too small for the numbers of the nobles who daily crowd to pay their respects to the emperor. When he goes out, he is accompanied with a great number of lords and persons of high rank, who also excel in science or the fine arts. These are followed by the life-guard, who are persons of quality, but being natural children of kings and princes, are incapable of succeeding to the crown. After these follow the second life-guard, consisting of several thousands, one-half of which goes on about the distance of half a cannon-shot before his majesty, and the remainder follows at about the same distance behind. The soldiers are all admirably trained: they are all clothed in black silk, and march with so much order, that not an individual is ever seen out of his place, and with such silence, that a single word is not to be heard. Nor do the citizens dare to move their lips when the emperor passes by: nothing is then to be heard but the rustling of men and horses. The streets are, at such times, made very clean, strewed with sand, and sprinkled with water. The doors are all open, yet no person is permitted to look out of them or from the windows, all must keep concealed within their houses, unless such as will kneel upon mats before them. The imperial treasures consist of silver and gold, packed in chests, each weighing about eighty pounds: these are placed in the several towers of his castles, with legacies, writings, &c. This vast treasure is continually accumulating; for the revenue of two or three months is, in Japan, equal to the whole annual expenditure.

The senators and ministers of state come daily to court, and dispatch all public affairs by the emperor's directions. These are maintained at a very considerable expence, and receive great honour and respect from inferior princes and lords. Their authority and power depend upon the emperor's pleasure; and though all the affairs of the kingdom pass through their hands, yet they never venture to propose any advice but that which they know will be agreeable to the prince.

The revenues of these commanding lords are very great, but

but only in proportion to their expences; for they are obliged, however distant from the court, to reside six months every year in the city of Jeddo, to wait on the emperor. Their mode of travelling is exceedingly expensive, on account of the numerous trains which follow them, which varies according to the rank of the lord; those of the lowest station seldom travel with less than three hundred persons: and there are instances in which a single noble is attended on his journey to and from the court by five or six thousand dependants. These they clothe and maintain in a sumptuous manner. Besides these expences, which are very considerable, those of erecting public buildings, making high-roads, channels, castles, &c. are divided amongst the lords attending the court. When the principal lords build new palaces for themselves, besides the ordinary gates and doors, they cause another great and sumptuous entrance to be made, beautified with statues; and wrought all over with hard wax, or Indian lac, and richly gilt. This entrance being finished, it is covered, to keep out the sun and rain, and continues inclosed until the emperor honours the house with his presence: and after his majesty has passed and repassed the gate, it is wholly shut up, and never opened any more, no man being esteemed worthy to go in or out at the door through which the sovereign has passed.

His majesty never pays more than one visit to any of his lords, of which three years notice is given; and during the whole of this time preparations are constantly making with great care and expence: every thing is adorned with his arms, and never after used, but preserved with great devotion, in remembrance that the emperor did once condescend to eat in that house. After the emperor has been there one day, the princes of the blood, his counsellors, and the kings and great lords are treated with incredible magnificence for the next three months.

In Japan every individual, from the emperor to the meanest gentleman, has the right of coercion over his subjects and servants, which extends to the punishment of death. When a gentleman or soldier is condemned to die, he is allowed to destroy himself, whereas the citizen, merchant, and meaner persons suffer by the common executioner.

tioner. Almost every crime, however small, is punished with death. Theft, though but to the value of a penny, and gaming are esteemed no less crimes than murder.

The religion of the Japanese is, as we have already noticed, the worship of idols. There are several sects, of some of which the priests are not allowed to marry nor to eat animal food; and if any one of them is found to offend in these respects, the delinquent is buried up to his middle in the high-way, and every one that passes by, who is not of the rank of a gentleman, is obliged to give him a stroke on the neck with a wooden saw. In this manner the miserable priest languishes two or three days before he expires.

The methods which the Portuguese formerly adopted to propagate the christian religion have given the Japanese the greatest abhorrence to that system, which they manifest every year by a custom, well known to European travellers, of trampling on the cross, which is described by Professor Thunberg in the following words: "A few days after the Japanese new year's day the horrid ceremony was performed of trampling on such images as represent the cross and the Virgin Mary with the child. These images, which are made of copper, are about twelve inches in length. This ceremony is performed for the purpose of imprinting on every one an abhorrence of the christian doctrine, and of the Portuguese, who attempted to propagate it, and at the same time to discover whether any remains of it are left in any Japanese. The trampling is performed in such places as were formerly most frequented by the christians. In the towns of Nagasaki it continues for four days, after which the images are carried to the adjacent places, and laid by till the following year. Every one, except the governor and his train, even the smallest child, is obliged to be present at this ceremony. At every place overseers are present, who assemble the people by rotation in certain houses, calling over every one by his name in due order, and seeing that every thing is duly performed. Adults walk over the images from one side to the other, and children in arms are put with their feet upon them." It is further observable, that as soon as the Dutch ships arrive at Japan, the crews are obliged to deliver up all their bible^s and prayer-books,

which

which are then nailed down in a chest, and not returned till their departure.

We shall close this article with briefly noticing the Kurile Islands, and those which are frequently termed the Northern Archipelago. The sea which separates Japan from Kamtschatka contains more than twenty islands, which are called the Kuriles: in these are a variety of volcanoes and hot springs. Here the empires of Russia and Japan meet together; the northern isles acknowledge the sovereignty of the former, the southern that of the latter, with whom they carry on some trade. The inhabitants are distinguished for humanity and probity, are very hospitable, and shew a marked attention and respect to old age.

The Northern Archipelago consists of several groupes of islands between Kamtschatka and North America. Some of these are inhabited only for a few months in the year, and of course are thinly peopled, but others are pretty populous. The inhabitants are in general short in stature, and very strong and active.

The most perfect equality reigns among these islanders. They have neither chiefs nor superiors, neither laws nor punishments. They live together in families, and societies of several families united, which form what they call a race, who mutually help and support each other. The inhabitants of the same island account themselves of the same race. Feasts are common among them, and more particularly when the inhabitants of one island are visited by those of the others. The men of the village meet their guests, beating their drums, and preceded by the women, who sing and dance. At the conclusion of the dance the hosts serve up their best provisions, and invite their guests to partake of their feasts. Hunting and fishing form the principal business of their lives: they seem cool in their tempers, but when their anger is awakened they are exceedingly violent. Suicide with these islanders, and also among the Japanese, is not held in abhorrence; they frequently put an end to their lives with the greatest apparent insensibility.

VISITS TO THE BOTANICAL GARDEN.

FIFTH DAY.

“COME, my dear Gustavus, let us profit by the last fine days of autumn: let us once more visit the Botanical Garden. We have gone through the galleries of the Cabinet of Natural History. We have seen the birds, insects, and quadrupeds of the most distant countries. It remains for us to observe the vegetables, and these are certainly not the least brilliant and curious part of the garden. But how is this? You are no longer so eager. Have you forgotten the pleasure that you received from the sight of the Menagerie?” “On the contrary, I have this pleasure so present to me, that I am sorry to go to-day only to see plants. It is so amusing to see animals!” “But we shall not have quitted animals in examining plants. Plants themselves are a kind of animals, which do not move indeed, but which feed, and become fathers of a numerous progeny, like those that move.” “What! really?” “Certainly; or, at least, if this is not exactly the truth, it comes very near it. The root serves, in some measure, like a stomach to the plant, to digest its nourishment. The bark is a skin which covers all the vessels. The stem is the body of the animal, and the sap, which mounts from the root into the branches, nearly resembles the blood which circulates in the bodies of animals. Botany, or the knowledge of plants, is a science as agreeable as any: it directs our attention to the most useful and pleasing productions of nature: and if the Botanical Garden is a valuable establishment, it is chiefly on account of the advantages which it offers to any person who would study this science with success.”

We took the road to the Garden, proceeding with this conversation on the pleasure procured by the study of plants. Gustavus abandoned himself anew to all his enthusiasm. He promised himself a high treat in seeing assembled in the same inclosure the vegetables of all climates. He was particularly impatient to see the banana, whose leaves are two

yards

yards long and a foot broad ; and the sugar-cane, that precious reed, so dear to all children. As we went, he asked me several questions concerning the antiquity of the Botanical Garden, which I took pleasure in answering. "It is to Henry the Fourth," said I, "that we owe the first botanical garden which ever existed in France. A botanist, named John Robin, was charged by him to cultivate, in a separate garden, the plants brought by some travellers from America. He had intended to have this garden at Paris ; but he was informed that the plants would prosper better in a more southern city, and Montpellier was chosen. So in 1598 a botanical garden was made there, the care of which was given to a physician of that city.

"Things are not brought to perfection all at once ; and several mistakes are sometimes necessary to arrive at a truth. It was a great mistake to suppose that art could not resist the inclemencies of the climate, and to overlook the advantages of having a botanical garden at a city like Paris, which is the centre of sciences, and the rendezvous of learned men. Accordingly, Guy de la Brosse represented this inconvenience with so much earnestness to Louis the Thirteenth, that he obtained an edict, which, for the sake of the health of the people, and the instruction of medical students, decreed the establishment of this garden, and the necessary funds for building and maintaining it. This edict was speedily executed. After having properly disposed some land fit for the purpose, plans were brought from all parts, and that with so much diligence and success, that, at the end of ten years, Guy de la Brosse published a catalogue of more than ten thousand plants contained in this garden.

"It was soon thought that it was not sufficient to have a botanical garden ; and that it would be necessary, in order to draw from it all the advantages proposed, that three professors and a demonstrator should make them known, and discover their virtues and their properties. Consequently one was charged by the government to teach the virtues of plants, the second their component principles, and the third their different preparations ; whilst the demonstrator should point them out in the garden and the field.

"Such were the commencements of the Botanical Gar-

den; they languished for some time: but Fagon, who had a great taste for botany, and great zeal for the progress of the sciences, had no sooner the direction of it, than he consecrated himself entirely to bring it to perfection. Not content with seeing in it the plants of different countries, he resolved to go to inform himself in the Cévennes, on Mount Or, in Auvergne, in Languedoc, on the Pyrenées, and on the Alps, of their appearance and manner of growth in those places; and small as was then his fortune, he brought thence, at his own expence, all the plants which he knew were wanting in the garden."

As I was relating these particulars to Gustavus, we entered the Botanical Garden, and directed our steps towards the Labyrinth. Autumn had already begun to turn yellow, and disperse the leaves of the trees, which we perceived at a distance, but those in front of us had suffered no decay. The appearance of those two hills, covered with trees, which never lose their verdure, has something in it very picturesque. The yew trees, whose branches hang in disorder towards the ground; the pines, whose foliage whistles in the air whenever it is shaken by the wind; the arbutus, whose mournful leaves resemble those of the cypress; are all equally pleasing to the sight and the imagination. Gustavus was particularly struck with the attitude of one of those trees, which raises itself majestically above all the others, and whose noble branches extend far around its colossal trunk. He asked me its name, "That," replied I, "is the cedar of Lebanon; it holds the first rank among the largest vegetables. On Mount Lebanon, of which it is a native, this tree rises to a prodigious height, and its trunk can scarcely be embraced by six men. Its figure is pyramidal. It preserves its leaves during the winter. Its branches fall towards the ground like a plume, and produce the thickest shade. Its fruit is nearly of the same shape as a fir cone, only it is smoother, more even on its surface, and less pointed at the extremity. Its wood is reddish and odiferous. There naturally exudes from it, during the heat of the summer, a gum or resin, which the Egyptians use to embalm their dead, in order to communicate to them that immortality which nature has given to the wood of this tree.

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tree. There are cedars one hundred and thirty feet high, and thick in proportion." "Is it long since this cedar was planted?" "It is more than sixty years old. But what adds to the respect inspired by its great age, is the remembrance of the celebrated Bernard de Jussieu, who planted it with his own hands in 1734, after having brought it from England." "O! this great tree must then have been very little." "So little, that the learned botanist, whom I have just mentioned, carried it in his hat." "And what is that pedestal which is placed at the foot of the cedar? It looks as if there ought to be a bust on it." Indeed he was right: it was that of Linnæus, the celebrated Swedish botanist; but at a certain period of the revolution ignorant people took the bust of the sage for that of an aristocrat, and broke it. "O, if I were to determine, I know whose bust I would place at the foot of the cedar." "Whose, my dear?" "That of the learned man who planted it. I think it would be just." "Very well; I like that idea, and I am persuaded that it will be realized. Linnæus certainly deserves a monument in the Botanical Garden; but Bernard de Jussieu, to whom science and this garden are under so many obligations, deserves one also; and where could it be better placed than at the foot of this cedar, of which he made us a present: a tree incorruptible as his reputation?" "I have one question to ask you. I just now saw these words written up over the garden gate: "Citizen Jussieu will have a botanizing on the next fifth day in the wood of Meudon." Is this the same Bernard de Jussieu who planned the cedar of Lebanon?" "No, my dear, it is his nephew; a man equally worthy by his virtues and his talents to bear a celebrated name. He has succeeded at once to the place, the merit, and the fame of his uncle." "He then has botanizings in the wood of Meudon?" "Yes, every year in fine weather, at the head of all the students who choose to follow him, he goes through not only the wood of Meudon, but all the environs of Paris, teaching the names and qualities of all the plants, and instructing his scholars to know them." "I think these walks must be equally agreeable and useful; and next year, if we are still at Paris, I shall ask leave of papa to follow him." "Very well,

well, my dear Gustavus. The zeal that you show is most commendable. Your father will not fail to second it."

Before we bade adieu to the cedar, the pines, and the yew trees, Gustavus asked me why certain trees always preserve their verdure whilst others lose it periodically. "Does this diversity," added he, "produce any good?" "My dear," replied I, "whilst the Author of nature causes the repose of winter to succeed to the greater part of plants to the labour of the three other seasons, he shows, by preserving the leaves of the juniper, the holly, the cedar, the fir, and several others, that he is subjected to no law, no necessity. But he does not use this liberty from caprice; he regulates its use by utility to man. This truth becomes still more sensible, if we cast our eyes on those resinous trees of which the north is full, which are rendered impenetrable by their oil to the water and frost, which destroy almost all others. The Author of nature has prepared these immortal forests to preserve heat and life to the inhabitants of those cold regions."

Descending from the Labyrinth, we found ourselves before that part of the garden which is called "*the Beds*." The door having been opened to us, I caused Gustavus to observe several plants, some of which were still in flower. "Here is one," said he to me, "which I know perfectly; it is the heliotrope, or turnsol." "Yes, that is it; it is the Peruvian turnsol." "Why do you call it Peruvian?" "Because it came to us from Peru." "Yes, it is a very common flower. The nosegay women sell it at the corners of the streets. I thought that it was found every where." "I grant that it is very common now; but it is no less true that it was not known in France till sixty years ago. Joseph de Jussieu, who sailed to Peru with Condamine, gathered it in the valley of Riobomba, and sent the first seeds of it to the Botanical Garden in 1740." "He made us then a very pretty present, for its smell is extremely agreeable." "It has a scent something like that of vanilla. It is now cultivated in all gardens. We have in France a wild heliotrope, the bitter and caustic leaves of which are good for curing warts." "O! O! what is that singular plant, whose leaves are covered with little icicles? It is no

yet cold enough, I think, for the hoar frost to adhere thus to a plant." "Your eyes deceive you, my dear Gustavus; and many others would mistake in the same manner. These that appear to be little icicles, are only the sap of the plant itself, which filters and escapes through the stalk, and which, by coagulating, forms those little brilliant drops that you see, which have so strong a resemblance to ice, that it has gained the name of ice-plant. It is a kind of mesembryanthemum, very common at present." "It is very singular. But something strikes me. Here are a great number of plants in flower. The heliotrope is in flower. This vase contains a beautiful plant with white flowers. Here is a fine carpet of yellow ones. There are violet flowers. I did not expect, at the end of autumn, to find still so great a variety among the flowers of this garden." "My dear, the greater part of flowers being designed to embellish the habitation of man, at least for a time, they are careful not to show themselves all in company, or in the same month. Flowers succeeding each other, form, as it were, a rich and varied garland, hung by nature round the temple of the seasons. Spring shows us primroses, violets, hyacinths, cowslips, narcissuses, lilacs, tulips, jonquils, and roses. Summer shows us marygolds, blue-bottles, rockets, poppies, and pinks. Autumn afterwards displays to us balsams, Indian pinks, meadow saffron, and a hundred other kinds. Winter bringing back frosts and fogs, at length draws down its black curtain over nature, and hides from us, in some measure, the spectacle; but whilst it makes us wish for the return of verdure and flowers, it procures some repose to the earth, exhausted by so many productions: but I speak to you of the general effects of winter on fields and common gardens. In this garden winter is, in some sort, imperceptible. The plants of the hottest climates find in its green-houses an asylum against cold; and of this garden in particular it may justly be said, "Without leaving the city we here find the country; and in this garden, peopled with green trees, spring may be found in the midst of winter." But we forget to examine the plants around us. Stretch out your hand towards this leaf. Did you observe how it bent back? This

plant flies from the hand that would touch it. It is the sensitive plant, or mimosa. At the setting of the sun it appears very sensible of the loss of this star; it shrivels so much, that it seems to dry away as if dead. When the sun appears again in the horizon it recovers its natural state; and the brighter the day is the more fresh and beautiful it is; but the sudden passage of a thick cloud makes it fall into that folded state, which botanists consider as a kind of sleep." "What a singular plant! One would think indeed that it possesses feeling." "Yes, if the ancients had known it, they would certainly have made of it what they have made of the reed, the laurel, and the cypress; and the ingenious Ovid would have added this fiction to those which are the subjects of his most beautiful work. In fact, the sensitive plant naturally calls for a metamorphosis: witness the name which the savages themselves have given it. Those of Senegal call it guerakiao, that is to say, good morrow; because, say they, when one touches it, or speaks to it near, it immediately inclines its leaves to bid good morrow, and show that it is sensible of the civility offered it."

ACCOUNT OF THE INFANCY
AND
EARLY PROGRESS OF GREAT MEN.

Number II.

THE CHILDHOOD OF PASCAL.

THE celebrated Pascal was born at Clermont, in Auvergne, on the 19th June, 1623. His father, who was first President of the Court of Assistance at Riom, was named Stephen Pascal, and he called his son Blaise Pascal. He was a learned man, and an able mathematician. He had a particular tenderness for this child, who was his only son. This tenderness increased to such a degree, that he resigned his employment, and came to settle at Paris, that he might be the better able to procure his son a good education.

Young Pascal had scarcely seen the light when he began

to give proofs of extraordinary sagacity : he wanted to know the reason of every thing, and never submitted but to what appeared to him evidently true ; so that when good reasons were not given him, he searched for them himself, and never quitted the point till he had found some capable of satisfying him. His father, perceiving that he was naturally inclined to reasoning and going deep into every thing, feared that if any knowledge was given him of the exact sciences, he would attach himself to them in such a manner, that it would not be possible to make him learn the languages, to which study he had resolved that he should apply. He therefore particularly resolved to conceal from him the mathematics, which is a science of reasoning. Notwithstanding his precautions, as he sometimes saw mathematicians, he could not prevent the word geometry from escaping in conversation. His son made this a subject of questions. M. Pascal pretended at first not to understand him ; but our young philosopher returned so often to the charge, that at length he thought it necessary to satisfy him in a general manner, and accordingly gave him this answer. “ Geometry is a science which teaches the method of making exact figures, and finding their proportions with regard to each other.” This was indeed very vague ; but knowing the aptitude of the child to search to the bottom even of the smallest things, his father forbid him to think or speak farther on the subject. Pascal was then only twelve years old. At so tender an age it was not to be apprehended that abstract truths could take any hold of his mind. Yet upon this simple opening he began to reflect on the definition of geometry that his father had given him. He knew well that he was forbidden to employ himself about it, therefore he worked in secret. His play-room became the place of his meditations ; he therefore made figures on the wainscoat with charcoal, like circles and triangles, and endeavoured to find their proportions. He did not at all know what he did in tracing these figures ; but he supplied this want of knowledge by definitions which he himself imagined. He called a circle a round, a line a bar, &c. He then made axioms, established principles, and connected things in such a manner by reasoning, that he formed

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ed demonstrations. He first discovered the properties of the section of lines, those of parallel lines; some belonging to triangles, and at length arrived, by a chain of truths and consequences, at the thirty-second proposition of the first book of Euclid.

Whilst he was plunged in these meditations his father entered. This interview frightened him at first; but the manner in which his father spoke a little re-assured him. He asked him, without any apparent emotion, what he was doing? He replied that he was searching for such a thing: that was the proposition of Euclid that I have just mentioned. Although this answer surprized his father extremely, he contained himself, and continued to ask him questions. The first was, what had made him think of this? The child replied, that he had first discovered such a thing, which had led him to such another. Thus, by going back, still explaining himself by his names of bars and rounds, he came down to the axioms and definitions which he had imagined. M. Pascal was so astonished at the force of his son's genius, that he quitted him without being able to utter a word. He went immediately to the house of one of his intimate friends, named M. le Pailleur, who was a good mathematician, to communicate to him his joy, or rather his surprise; but he was so struck, that, on his arrival, he remained motionless. Tears even flowed from his eyes. M. le Pailleur, alarmed at his situation, begged him no longer to conceal from him the cause of his affliction. "I do not weep from grief," replied M. Pascal, but from joy. You know," added he, "the pains that I have taken to conceal from my son the knowledge of geometry, for fear of its diverting him from his other studies. Yet see what he has done!" He then related all that he had seen. M. le Pailleur, equally astonished at this prodigy, advised him no longer to conceal any thing from his son, but to give him Euclid's Elements.

Pascal read and understood these elements without any explanation, with the greatest facility and satisfaction. His mind, attentive to every thing, suffered no fact at all singular to escape without examination. He always directed himself towards its cause, and occupied himself about nothing

thing else till he had discovered it. One day at table some one having struck an earthenware-plate with a knife, he observed that a sound was produced which ceased as soon as the hand was placed on the plate. He repeated this experiment, and made several others on the same subject. He remarked so many things in his researches, that he made a little treatise on sound. His father carried this work to an assembly of learned men, to which he went regularly every week; and these gentlemen admired it so much, that they begged him to give them his son for a member of their society. The new comer endeavoured to deserve this favour by his productions. Though he only employed himself in mathematics during his hours of recreation, his father obliging him to give himself up entirely to the study of languages, he made so great a progress in this science, that, at the age of sixteen, he composed a treatise on conic sections, which was admired by the greatest mathematicians.

FIRST PRIZE ESSAY,

On the Question for No. 13, of the MONTHLY PRECEPTOR,

“What are the principal advantages to be derived from the study of the Greek and Latin Classics?”

By Master THOMAS ALLIES, aged 16.

“Juvat integros accedere fontes atque haurire.”

NO branch of learning has been more deservedly esteemed and cultivated than an acquaintance with the Greek and Latin Classics: they have been universally studied and admired; the experience of ages has proved them to be beneficial; and their intrinsic graces have charmed every mind which was susceptible of the beauties of spirit, taste, and elegance. The greatest and most distinguished men that ever adorned the annals of our nation, have laid the foundation of their eminence and knowledge in a classical discipline: and without it a More, a Sidney, a Raleigh, a Milton, an Addison, and many others, would not have attained to that perfection and dignity of character at which they aspired and arrived.

Classical learning contributes, more than any other, to
open,

open, refine, and polish the mind; as it gives it a tincture of elegance and liberality of sentiment no where else to be found. It is both useful and ornamental: it qualifies for any profession or occupation; and opens a source of pure pleasure unknown to the vulgar. It has a tendency to produce a true and correct taste, to adorn and improve human nature, and to give the ideas a noble elevation. It furnishes the power of finding satisfactory amusement for the hours of solitude. It imparts a grace to the man in the active stage of life; and, when retired from business, renders his intellectual faculties capable of sublime and refined contemplation. It tends most directly to form the true gentleman: for who can taste the excellencies of Virgil and Horace without a polite and embellished mind. The classic writers have a powerful influence in softening and meliorating the disposition, and in enlarging and improving the understanding. They have in general been deemed friendly to morality, and to all that is amiable and laudable in social intercourse. And though we ought not to regard them as models of perfection, their beauties and their moral sentiments are worthy to be imprinted on every heart.

Greek is a language most beautiful in itself, and the source of all elegant and polite literature. A knowledge of it will contribute greatly to adorn the gentleman, while it is essential in the scholar. It will enable him to judge of composition with taste. It will point out to him, with precision, the meaning of many English words, and technical terms in every art and science. The study of the Greek and Roman philosophers, poets, and historians, is likewise highly favourable to the prevalence of good sense, as it affords an opportunity of expanding and ennobling the human mind: for he who is conversant with the writings of a Plato and a Xenophon, or a Cicero and a Seneca, must imbibe sentiments no less liberal and enlarged than elegant and ingenious.

By learning the Greek and Latin languages a taste is often formed for those authors who are able to furnish the purest and most solid delight and instruction during life. We can peruse, at our leisure, the works of Thucydides, Livy, and Tacitus, or of Homer, Virgil, and Horace, in
their

their own tongue, and thus lose but little of their genuine meaning and simplicity; and surely this must be vastly more gratifying than the most excellent modern translations or imitations. For who would drink at the distant stream when he may have access to the fountain?

Through the medium of the classics, information is conveyed to us of the manners and sentiments of remote ages; and thus we have the history of antiquity in its original and most interesting state.

Our native tongue cannot be perfectly understood without a knowledge of Greek and Latin, as many of our words are from thence derived; and mere English scholars incur great danger of misapplying these words: but by an acquaintance with the antient languages we learn their true import and right pronunciation, and are supplied with an elegance and copiousness of diction, which enable us to express our ideas in a clear, easy, and dignified style.

If our ancestors had been ignorant of Greek and Latin, we might probably have remained destitute of an English Bible until the present day. Surely, then, a knowledge of these languages must be a desirable acquisition not only to the scholar but to the christian: for to them he is indebted for a translation of the best of books, and the source of all true religion.

Thus the "advantages to be derived from the study of the Greek and Latin classics" are of the most intrinsic worth to mankind in general; but more especially to those who value an elegant, enlightened, and philosophical mind. And the solid pleasure and improvement which they afford will liberally reward the diligent application of every student; and certain it is, the deeper and wider we dig the mine the more abundant will be our treasure.

I declare that the annexed essay is my own, sole, and unaided production, and that I am not more than 16 years of age.

THOMAS ALLIES.

Attestation.

The annexed essay is the sole, genuine, and unassisted production of my pupil, Master Thomas Allies, who completes his 16th year this month: he is much obliged to your honourable reward of his past efforts, and hopes the present may meet with approbation, as it is the last which he is permitted to make.

Worcester, Angel-row Academy,

GEORGE OSBORN.

Jan, 22, 1801.

PRIZE TRANSLATION
OF
OGER THE DANE.

By Miss K. NICHOLSON, not 14,

Pupil of Mrs. E. Maudslay, Rochester.

OGER, son of Geoffrey, king of Denmark, was one of the most distinguished warriors of the time of Charlemagne. He had learnt the art of war under Duke Name, of Bavaria, whom he had accompanied into Italy, when Charlemagne, at the head of a numerous army, advanced to the assistance of Rome against its enemies, the Saracens.

In this war Oger from the first signalized himself by acts of valour worthy the most experienced and bravest officers. The oriflame, that sacred banner for which the Christians had so remarkable a veneration, had been taken by the Saracens. Oger, with a noble ardour and almost unexampled intrepidity, rushed into the midst of their army, recovered the holy standard, and afterwards, still thirsting for glory, fearlessly returned to the attack, took at length from its possessors the banner of Mahomet; and, as the reward of so much merit, received both from the emperor and his army the highest encomiums and marks of honour.

Charles, one of the emperor's sons, was in the army; he was of the same age with Oger, and his companion in the field of battle; but to mean and abject sentiments this prince united a jealous and mischievous disposition. Oger's glory and reputation, far from inspiring him with a generous emulation, filled him, on the contrary, with a most implacable hatred for the hero: nor was this the effect of a momentary or transient impression, for in proportion to Oger's increasing fame (with which, by means of the repeated acts of heroism he performed, all Europe soon resounded) envy and malice gained additional strength in the mind of his perfidious rival, and induced him to employ all possible artifices to destroy him. He sometimes caused secret ambushes to be laid for him; at others he allotted him in battle such situations as he thought most perilous; but Oger constantly proved

proved superior to all these stratagems, and escaped unhurt all the dangers to which his cruel enemy exposed him.

He was blest with an amiable and promising son, named Baudoin. This young prince had been educated at the Danish court; but his father, as soon as he thought it time to introduce him to the world, sent for him to Paris, where he undertook to train him himself to the profession of a soldier. The youthful hero, endowed with every gift of nature and education, soon shewed himself, by the progress he made, and by his fortitude, courage, judgment, and activity, worthy so great a parent. Charles, whose malignant disposition never altered, retained for the son the inveterate hatred he had so long borne to the father; and a favourable opportunity soon offered for venting it by one blow on both: for one day that Baudoin, whom he had shamefully insulted, had the firmness to answer him with becoming dignity, this unfeeling wretch, in a transport of rage and fury, drew his sword, and without giving him time to defend himself, stabbed him to the heart.

When the unhappy parent heard this melancholy account he at first sunk into deep and silent despondence, but, by degrees, the most violent paroxysms of fury succeeded his dejection; and he ran frantically into every part of the palace in pursuit of the murderer. He at last learnt that he had taken refuge in the emperor's apartment. Inflamed with rage, and threatening death and vengeance, he entered with his sword drawn, and following only the impetuous dictates of his anger, rushed on the vile assassin (who attempted to conceal himself behind the emperor), exclaiming, "Have I at length discovered thee, wretch that thou art!—Defend thyself now, if thou art able."—In vain the emperor interposed and endeavoured to separate them; without the assistance of the officers and guards who surrounded the imperial throne, the traitor must have perished, but they at length succeeded in preserving his life.

Among these was the Duke of Name, whom Oger had always loved and revered as a father. This nobleman, having hurried him out of the hall, convinced him of the excessive impropriety his desire of revenge had occasioned him to commit, and prevailed on him to retire. He, how-

ever, united with all the other barons of the court in imploring the emperor's forgiveness for him. But Oger had undoubtedly been guilty of a fault, which nothing but the circumstances of his situation could excuse, in respecting so little the imperial power, as to dare attack the son of his sovereign in his father's presence; and consequently that monarch, who considered only the rights of his dignity, which had been infringed by Oger's attempt, was too much irritated to grant the pardon so earnestly entreated. An exile, therefore, from the court and from France, Oger wandered for a length of time through the different countries of Europe, in whose favour he exercised his valour, till Charlemagne, however unwillingly, was constrained to recal him.

The Saracens who, under the command of Bruyer, had again taken up arms, had landed in Provence, and, every where victorious, had penetrated as far as Paris, to which they had laid siege. The emperor assembled all his forces, and retired with them into that metropolis; but, at this critical period, deprived of his best officers, he could scarce repel with his whole army the attacks of the infidels. Fortunately, however, Bruyer, full of confidence in his own strength, and impatient for victory, offered to terminate the war by a single combat. All the nation, particularly the court and army, immediately turned their thoughts towards Oger, who was then in England, and whom (as they felt him to be the only one able to vie with, and successfully oppose, so formidable an enemy) they considered as their only hope. The emperor was solicited from all sides to recal him, and was at length obliged to comply with the general request. Oger accepted the invitation, but on condition that, if he was conqueror, Charles should be delivered up to him. At first the emperor refused to accept this proposal, and offered any other substitute for his son, but Oger was inflexible, and Charlemagne was compelled to submit.

The invincible warrior arrived, and the third day after his return was appointed for the combat. The lists were opened at day-break; the two valiant combatants entered, and their armies, each ranged on the side of its respective champion, remained silent spectators of the engagement. Bruyer was of a gigantic form and stature, and possessed incredible

credible strength; but Oger exceeded him in agility and military knowledge. The first onset was dreadful; the lances were shivered to atoms, but the warriors remained firm in their seats, and, drawing their swords, continued the contest with redoubled fury.

Already their armour was pierced in several parts, and stained with the blood which flowed through the apertures; but victory seemed to incline towards Oger. The African monarch, transported with impatience, and anxious to terminate the combat, threw aside his buckler, closed impetuously with his adversary, and aimed at him with both hands a most tremendous blow; but the Danish hero, with the greatest agility, avoided the stroke, and, at the same moment, with his sword, pierced the defenceless body of his enemy. The African giant fell. A cry of horror and despair issued from the Saracens army, while the Christian camp resounded with acclamations of joy and exultation.

Oger was then triumphantly conducted into the emperor's presence, where, after receiving the grateful approbation of the assembled multitude, he demanded the performance of the promise that had been made him. Charlemagne turned pale, and dreaded the effects of Oger's vengeance, but the engagement he had entered into was too solemn to admit a possibility of eluding it.

The cruel assassin of Oger's son, pale, trembling, and disarmed, was brought before him. "Now, wretch," said the warrior to him, with a fierce and indignant look, "now shalt thou suffer for thine inhuman perfidy." He then seized him by the hair, and raised his sword, as if to plunge it into his heart. The emperor gave a deep groan, the attendants were struck with horror, and the prisoner fell at his feet, breathless with fear and terror. But Oger, suddenly throwing aside his sword, prostrated himself before Charlemagne, saying, "You may now conceive, Sire, the feelings of a parent for the murder of his child. Take back your son, I return him to you. Alas! why is it not in his power to restore me mine!" At these words the whole assembly became motionless with astonishment. Charles was carried into another apartment. The emperor's dread gave place to love and admiration of the generous Oger, whom

he pressed to his bosom, while all who were present encircled them, and applauded with enthusiasm his magnanimity and courage. The unworthy son of Charlemagne could not, however, escape the punishment due to his crimes; covered with shame and infamy, and generally despised and hated, death soon terminated his miserable existence.

I declare that the above is my own, sole, and unaided production, and that I am not 14 years of age.

K. NICHOLSON.

Attestation.

I solemnly declare that Katherine Nicholson, my niece and pupil, who was 13 years old last October, has not received any assistance in the above translation, either by explanation, suggestion, correction, or in any other way, directly or indirectly.

ELIZ. MAUDSLAY.

Rochester, Feb. 13, 1801.

GENERAL ADJUDICATION OF THE PRIZES

GIVEN WITH THE THIRTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

Question.—"What are the principal advantages to be derived from the study of the Greek and Latin Classics?"

The first prize has been adjudged to Master THOMAS ALLIES, of Mr. Osborn's academy, aged not 16. Attested by Mr. Osborn.

To receive Books value two guineas,

Provided the Editors shall receive a further attestation from Mr. Osborn, certifying that the writer had not completed his 16th year before the essay was sent off.

The second to Miss MARIA JANE WALDIE, of Newcastle-upon-Tyne, aged 15. Attested by her brother.

To receive a Silver Medal, value Half-a-guinea.

The third to Master GEORGE EDWARDS, of Barnard-Castle School, aged 14 years and seven months. Attested by Mr. Barnes, head master.

To receive Dr. Mavor's Natural History.

The

The fourth to Miss ISABELLA ORMSTON, of Newcastle-upon-Tyne, aged 14. Attested by her mother.

To receive Dr. Mavor's British Nepos.

The fifth to Master R. NANTON, of Messrs. Palmer's school, Hackney, aged 15. Attested by Mr. Palmer.

To receive Dr. Gregory's Elements of a Polite Education.

The sixth to Master THOMAS RIDLEY, of Mr. Newby's academy, Birmingham, aged 14 years and one month. Attested by Mr. Newby.

To receive Dr. Mavor's Natural History.

The seventh to Master JOSIAH CONDER, of Messrs. Palmer's school, Hackney, aged 11. Attested by Mr. Palmer.

To receive Irvine's Elements of Prosaic Composition.

The eighth to Master HENRY WALTER, of Brigg School, aged 15. Attested by Mr. Walter, master, and Mr. Border, usher.

To receive Irvine's Elements of Prosaic Composition.

The ninth to Master JOHN GREGORY, of Messrs. Palmer's school, Hackney, aged 12. Attested by Mr. Paris, classical tutor.

To receive Irvine's Elements of Prosaic Composition.

The tenth to Master G. F. DICKSON, of the same school, aged 15 years and nine months. Attested by Mr. Palmer.

To receive Dr. Gregory's Elements of a Polite Education.

The essay of Master HENRY OKES, of Mr. Newby's academy, Barningham, is a surprising effort, considering the early age of its author, who is only between 10 and 11. The essays of Master FALLOWFIELD, of Mr. Barnes's seminary, Barnard-Castle: and of our old correspondent, Master JOHN CLARKE, educated at Messrs. Palmer's, are full of matter, and very ingenious, but they have not stuck sufficiently close to the subject. That of Master BARR, of Mr. Osborne's academy, Worcester, is also very little inferior to those of the successful candidates.

The following are all deserving of COMMENDATION:

Master Henry Biden, not 13, of Mr. Newby's academy, Barningham, near Greta Bridge, Yorkshire

Master J. Brown, not 16 years of age, of Darlington.

Master John Clarke, aged 13 years and eight months, of the Grammar School, Barnard-Castle, Yorkshire

Miss Elizabeth Ryland Dent, aged 12 years and two months, of Mrs. Dent's boarding-school, Northampton

Master Thomas Gibson, aged 13 years and eight months, of the Grammar-school, Barnard-Castle, Yorkshire

Master *John Hird*, aged 14 years and four months, of the Grammar School, Barnard-Castle, Yorkshire

Master *J. Hobson*, under 16 years of age, of ditto

Master *Henry Jones*, not 14 years of age, of Mr. Newby's academy, Barningham, Yorkshire

Master *John Reynolds Beddome*, not 14 years of age, of Messrs. Palmer's academy, Hackney

Master *Richard Steele*, aged 13 years and four months, of the Grammar-school, Barnard-Castle, Yorkshire.

Master *John Vincent Thompson*, not 16, of the seminary, Thorp-Arch, Yorkshire

Master *C. W. Thompson*, aged 13 years and one month, of ditto

Master *Thomas Taylor*, aged 14, of the academy at Middleton

Master *George Weston*, aged 13 years and two months, of the Grammar-school, Barnard-Castle, Yorkshire

Master *William Wood*, aged 14 years and four months, of ditto

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND SUBJECT.

TRANSLATION FROM THE FRENCH.

“ OGER LE DANOIS.”

The first prize has been awarded to Miss KATH. NICHOLSON, of Rochester, aged 13. Attested by Mrs. Maudslay, her aunt and governess

To receive Books, value One Guinea and a Half.

The second to Miss SOPHIA TONGUE, of Croom's-hill boarding-school, aged 13 years and a half. Attested by Miss Smallwood.

To receive Dr. Watkins's Biographical Dictionary.

The third to Miss ANN PARKEN, of Dunstable, aged 13 years and two months. Attested by her father.

To receive Dr. Mavor's Lives of Plutarch abridged.

The fourth to Miss MARY HAMPSON, of Luton, aged 12 years and nine months. Attested by her governess, Mrs. Binfield.

To receive Miss More's Sacred Dramas.

The fifth to Miss MARY LLOYD, of Peterley-house, not 12 years of age. Attested by her governess, Mrs. Krake.

To receive Dr. Mavor's British Nepos.

The sixth to Miss S. TINDAL, not 12 years of age. Attested by her mother, and her governess, Mrs. Locke.

To receive Allen's History of England.

The

The seventh to Miss HARRIET FENTON, of Godliman-street, Doctor's Commons, aged 12. Attested by Mr. Ruelle, her French master.

To receive Dr. Gregory's Elements of a Polite Education.

The eighth to Miss MARY VOWELL, of Bath, aged 13 years and 10 months. Attested by her French master, M. Denais.

To receive Dr. Mavor's Natural History.

The ninth to Miss MARIA HAGUE, of Northampton, aged 13. Attested by her mother.

To receive Irvine's Elements of Prosaic Composition.

The tenth to Miss SUSANNAH TAYLOR, of Norwich, not 13. Attested by her father, Mr. John Taylor.

To receive Dr. Mavor's Plutarch.

The eleventh to Miss LOUISA ELIZ. TAYLOR, of Ruffel-place, Fitzroy-square, not 14. Attested by Mr. Reynolds, Master of Languages.

To receive Dr. Gregory's Polite Education.

The twelfth to Miss JANE WILLIAMSON, of Mrs. Ramfden's and Wartnaby's school, Hinkly, not 13. Attested by M. Geoffroin, French master.

To receive Dr. Gregory's Legacy to his Daughter.

The following are deserving of very high COMMENDATION, and are but little inferior to those which have received prizes.

Miss Juliana Hurst, aged 12 years and six months, of Bath

Miss Emma Milbourne, aged 13, of Alltop's-buildings, New-road

Miss Ann Macdonald, not 14, of King's Barns.

The following are also deserving of PRAISE.

Miss Charlotte Atterfoll, aged 11 years, of Crab-tree, near Fulham

Miss M. Atterfoll, aged 13, of ditto

Miss Maria Aggs, aged 13 years and six months, of Norwich

Miss Mary Theresa Aspinall, aged 12 years and a half

Miss Anne Elizabeth Button, aged 12 years and eight months, of Dupont and Aublay's school, Birmingham

Miss Bella Barrow, aged 12 years, of Devonshire-square, Bishopsgate-street

Miss Eliza Barnard, aged 12 years and five months, of Norwich

Miss Elizabeth Ewart, aged 13, of Sharnbrook Vicarage

Miss Henrietta Eyre, aged 12 years and nine months, of Reading

Miss

- Miss *Mary Gell*, aged 12 years and three months, of Friar's-walk boarding-school, Lewes
 Miss *Ann Grob*, aged 11, of Kentish-town
 Miss *Isabella Susanna Green*, aged 11 years and two months, of Durham
 Miss *Mary Howell*, aged 13, of Upper Thames-street
 Miss *Ann Hatch*, aged 13, of Windtor
 Miss *Anna Maria Lisle*, aged 13 years and eight months, of Aston House, near Alnwick, Northumberland
 Miss *Eliza Lisle*, aged 12 years and seven months, of ditto
 Miss *Ann Cooper Marsh*, aged nine years and six months, of the Crescent-school, Birmingham
 Miss *Mary Pallison*
 Miss *Elizabeth Peacock*, aged eight years and four months, of Mrs. Williams's school, York.
 Miss *Maria Polack*, not 14, of Mansell-street, Goodman's-fields
 Miss *Dorothea Rackett*, aged 13, of King-street, Covent-garden
 Miss *Mary Roberts*, not 13, of Painswick
 Miss *M. Simonds*, not 12, of Reading
 Miss *Sarah Stolworthy*, aged 11, of Kirby-street, Hatton-garden
 Miss *Sarah Sewell*, not 13, of Yarmouth
 Miss *Margaretta Taylor*, upwards of nine years
 Miss *Ann Weller*, aged 12, of Mrs. Gell's boarding-school, Friar's-walk, Lewes
 Miss *Ann Ward*, aged 12 years and eight months, of the academy in Gloucester-square, Southampton

NEW PRIZE SUBJECTS FOR No. XV.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of April.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

To shew by argument and example the excellence of Gratitude as a moral and christian virtue.

The best essay to entitle the writer to Books, value two guineas; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS

CLASS II.

TRANSLATION FROM THE FRENCH.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT
COMPLETED THEIR FOURTEENTH YEAR.

A Translation of the following.

Je m'arrête à vous, mes frères, qui êtes ici assemblés. Je ne parle plus du reste des hommes ; je vous regarde comme si vous étiez seuls sur la terre : voici la pensée qui m'occupe & qui m'épouvante. Je suppose que c'est ici votre dernière heure, et la fin de l'univers ; que les cieux vont s'ouvrir sur vos têtes, Jésus Christ paroître dans sa gloire au milieu de ce temple, et que vous n'y êtes assemblés que pour l'attendre, comme des criminels tremblans, à qui l'on va prononcer, ou une sentence de grace, ou un arrêt du mort éternelle. Car vous avez beau vous flatter ; vous mouriez tels que vous êtes aujourd'hui. Tous ces desirs de changement que vous amusez, vous amuseront jusqu'au lit de la mort ; c'est l'expérience de tous les siècles. Tout ce que vous trouverez alors en vous de nouveau, sera peut-être un compte plus grand que celui que vous auriez aujourd'hui à rendre ; et sur ce que vous seriez, si l'on venoit vous juger dans ce moment, vous pouvez presque décider ce que vous arriverez au sortir de la vie.

Or, je vous le demande, et je vous le demande frappé de terreur, ne séparant pas en ce point mon sort du votre, et me mettant dans la même disposition, où je souhaite que vous entriez ; je vous demande, donc, si Jésus Christ paroîtroit dans ce temple, au milieu de cette Assemblée, la plus auguste de l'univers, pour nous juger, pour faire le terrible discernement des boues et des brebis, croyez-vous que le plus grand nombre de tout ce que nous sommes ici, fut placé à la droite ? Croyez-vous que les choses du moins fussent égales ? croyez-vous qu'il s'y trouvât seulement dix justes, que le Seigneur ne peut trouver autrefois en cinq villes toutes entières ? Je vous le demande ; vous l'ignorez, et je l'ignore moi-même. Vous seul, O mon Dieu ! connoissez que vous appartiennent.—Mes frères, notre part est presque assurée, et nous n'y pensons pas. Quand même dans cette terrible séparation qui se fera un jour, il ne devroit y avoir qu'un seul pécheur de cet Assemblée du côté des réprouvés, et qu'une voix du ciel viendrait nous en assurer dans ce Temple, sans le désigner ; qui de nous ne craindrait d'être de malheureux ? qui de nous ne retomberoit d'abord, sur sa conscience, pour examiner si ses crimes n'ont pas mérité ce châtiment ? qui de nous, saisi de frayeur, ne demanderoit pas à Jésus Christ comme autrefois
les

les Apôtres ; Seigneur, ne seroit-ce pas moi ? Sommes-nous sages, mes chers Auditeurs ? peut-être que parmi tous ceux qui m'entendent, il ne se trouvera pas dix justes ; peut-être s'en trouvera-t-il encore moins. Que sais-je, O mon Dieu ! je n'ose regarder d'un œil fixe les abîmes de vos jugemens, et de votre justice ; peut-être ne s'en trouvera-t-il qu'un seul ; et ce danger ne vous touche point, mon cher Auditeur ? et vous croyez être ce seul heureux dans la grande multitude qui périra ? vous qui avez moins sujet de le croire que tout autre ; vous sur qui seul la sentence de mort devoit tomber. Grand Dieu ! qui l'on connoit peu dans la monde les terreurs de votre loi, &c. Mais que conclure des ces grandes vérités ? qu'il faut désespérer de son salut ? à Dieu ne plaise ; il n'y a que l'impie, qui pour se calmer sur ses désordres, tache ici de conclure en secret que tous les hommes périront comme lui ; ce ne doit pas être là le fruit de ce discours. Mais de vous détromper de cette erreur si universelle, qu'on peut faire ce que tous les autres font ; et que l'usage est une voie sûre : mais de vous convaincre que pour se sauver, il faut de distinguer des autres ; être singulier, vivre à part au milieu du monde, et ne pas ressembler à la foule. — *Sermons de Massillon, vol. iv.*

The best translation to be entitled to a Cabinet Library, value two guineas ; the seven next best to books, value five shillings each.

CLASS III.

ARITHMETICAL QUESTION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

A gentleman worth five hundred pounds a year runs into extravagance and folly ; for instead of living within his income, he spends continually beyond it, and is obliged to borrow money every year to pay his debts. For the first five years he borrowed two hundred pounds each year, at the rate of four per cent interest, and with the condition, that if he did not pay the interest punctually it should be added to the principal. As he never paid any interest he found, at the end of the five years, that his debt was considerably increased ; but not being willing to retrench his expences, though desirous of diminishing the old debt, and being little acquainted with the nature of interest, he determined for the future to borrow four hundred pounds a year,

year, and to apply two hundred pounds annually to the payment of the old debts, in the order in which they were contracted. In this way he continued for five years, borrowing four hundred pounds a year, at the rate of four and a half per cent, the interest being annually added to the principal, as in the old debt. At the end of these five years the interest of money rose to five per cent, at which rate he now borrowed five hundred pounds a year, three hundred pounds of which he applied to the payment of the oldest debts. At the end of these five years he died, leaving directions in his will that his estate should be sold, the debts paid, and then that four thousand pounds should be paid to his wife, and two thousand pounds to each of his five children. The executors complied as well as they could; they sold the estate for twenty-eight years purchase, paid off the debts, and then divided the remainder between the wife and children, in the proportion laid down by the will. It is required to ascertain what the wife and each child ought to receive?

The best answer will be entitled to a prize, value two guineas; and the seven next best to prizes value five shillings each.

MATHEMATICAL QUESTIONS.

IT is with great concern that we delay the distribution of the prizes for the mathematical questions proposed in December and November, and we must express our surprize at the occasion. Each of the two questions proposed a very useful exercise to young persons; the one in the art of measuring, the other in navigation. The importance of a knowledge of these arts to a vast class of persons in these kingdoms, seemed to insure to us a laudable degree of emulation to obtain the prizes: but we are compelled to observe, that the number of candidates is not equal to the number of prizes. We shall, therefore, leave both questions open to all, whether they have obtained prizes or not, and give two months for the performance of the exercise; in which time we flatter ourselves that we shall have such specimens of the knowledge of these arts in our schools as will be gratifying to the public, and creditable to both matters and scholars. The answers to the two questions are to be sent to Mr. Hurst, on or before the 5th day of April.

COMMERCIAL SUBJECT.

To the Editors of the MONTHLY PRECEPTOR.

GENTLEMEN,

THE good effects and influence of the Monthly Preceptor on the minds of young people I have had occasion to remark, though my pursuits are purely commercial. I perceive, by observations to Correspondents in your last number, that there may be many young minds

minds on tiptoe to display their abilities in the arrangement of mercantile accounts. If consistent with your plan, I beg leave to propose a question, and attach a reward in money to the performance of it. You will call upon me for five guineas, and act as you think proper in making my intentions known to the youths who desire to become candidates.

I remain, Gentlemen, your obedient servant,
 Throgmorton-street, No. 4, Angel-court, J. FRASER.
 Nov. 10, 1800.

QUESTION.

In Wicks's Book-keeping, page 69 to page 87, is the history of Antonio Prettyman's business, during the year 1798. It is required to produce a *Journal, Ledger, Bill-book, and Cash-book*, bound together, which will display the loss or gain on his transactions during that year; and also a *new inventory* of his *stock and debts* at the conclusion. The loss or gain must be proved to be correctly stated by the form which he (Wicks) recommends to be attached to the *Journal Entries* for ascertaining the balance of the merchants debits and credits, as per Instructions, page 17, 19, and 111.

The neatest and most correct books to be entitled to two guineas and a silver medal, value ten shillings and sixpence; the second best to one guinea and a silver medal, value ten shillings and sixpence; and the third best to sixteen shillings and a silver medal, value five shillings.

The books, properly attested, to be delivered in, on, or before the fifth of June, 1801, and in the first page to exhibit the following assertion.

	£.	s.	d.
" Antonio Prettyman's neat property at the conclusion of the year 1798, is	—	—	—
" The profit (or loss) upon this trade the same year amounts to	—	—	—
	" A. B."		

GRAND CONTEST OF SUCCESSFUL CANDIDATES.

The first class of prizes in the sixteenth number will be only open to such candidates as have received first or second prizes in any of the three classes since the first institution of the Preceptor, or whose essays, though not first or second, have been printed; and the subject will be,

What are the respective merits of the Antients and Moderns in Science and Literature? In what Arts and Sciences, and in what branches of Literature did the Antients particularly excel; and in what are the Moderns superior to them?

The papers to be received on or before the 5th of May.

JUVENILE LIBRARY.

LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XIV.

OF THE REFLEXIBILITY OF LIGHT, OR CATOPTICS.

THERE is no part of the science of optics more amusing, nor indeed more astonishing to unscientific readers than that which regards the reflexion of light. How a looking-glass comes to reflect images without their touching it? how the whole figure of a man, six feet high, shall be seen in a glass not above three feet? How when we look at some polished surfaces, as a watch-case, for instance, a man's face seems not bigger than his nail? While, if we look on other surfaces, the face shall be of gigantic size; these are all wonders that the curious would wish to understand, and the inexperienced to examine.

The property which polished surfaces possess of reflecting light, is referred by Newton to the principle of repulsion. For it is justly remarked by him, that those surfaces, which to our senses appear smooth and polished, are found, when viewed through a microscope, to be still rough and uneven. It will, however, suffice for our purpose, in describing the effects of reflexion, if we consider every particle of light as rebounding from the surface of a mirror, like a tennis-ball from the wall of the court.

It is, in truth, by reflexion that all objects are rendered visible. Even glass, crystal, and water reflect a part of the rays of light, or their forms and substance could not be distinguished;

tinguished; but those bodies which transmit it copiously are called clear or transparent, those which do not transmit it are termed *opaque*. The whole of the light which falls upon bodies is not however reflected. On the contrary, it is calculated that the smoothest and most polished surfaces do not reflect above half the light that falls upon them. Those bodies with polished surfaces, which reflect most copiously the rays of light, are called *mirrors*; by the antients they were made of metal, as iron, tin, or copper, and exquisitely polished; those in general use among us are made of glass, rendered opaque at the back part by an amalgam, or mixture of tin and quicksilver (or mercury), whence our common word looking-glass is derived. Mirrors are made in various forms, plane, that is, with a smooth and level surface, convex, concave, or cylindrical. The most common are the plane mirrors.

A ray of light striking perpendicularly, in a direct line, upon a plane mirror, is reflected in exactly the same direction. Those rays which strike it obliquely are reflected back in an opposite direction, but with exactly the same degree of obliquity. Hence the great law of reflexion is, that *the angle of reflexion is exactly equal to the angle of incidence*. This was explained to you in the twelfth lecture, fig. 3, and it will serve to account for all the phenomena of reflexion.

Lest you should, however, have attended to the maxims and definitions subjoined to that lecture less assiduously than you ought, I shall refer you to another figure. In fig. 1, no , may be considered as a ray of light striking perpendicularly on the surface of the mirror ab , and it is consequently reflected back in the same line. The ray do coming from the luminous body d , strikes the mirror obliquely, and is reflected to the eye in the line oe , by which you see clearly that the angle eon , is equal to the angle odn ; in other words, the angle of reflexion is equal to the angle of incidence.

This, you will answer, is sufficiently clear; but how comes it that I do not see the object at o , since it is there that the rays strike the mirror? and why is it that, on the contrary, the object appears behind the glass, and in the
situation

situation of *s*? This has been partly explained by a rule which I formerly laid down, namely, that we *see every thing in that line in which the rays last approached us*. Now an object is rendered visible not by single rays proceeding from every point of its surface, but by pencils of rays, or collections of divergent rays issuing from every point, as was explained in the preceding lecture. These pencils of rays are afterwards, by the refractive powers of the eye, converged again to points upon the optic nerve, which lies at the back of the eye, and these points of convergent rays on the optic nerve, are correspondent to the points of the objects from which the rays diverged. Now the pencils of rays strike the mirror, while they are in their divergent state; and as the angle of reflection is equal to the angle of incidence, they are reflected back in the same state, and converge exactly as they would have done had they not been intercepted by the mirror. As, therefore, we always see objects in the line in which the rays approached us last, the two lines, viz. that which goes from the object towards the mirror, and the reflected line, are united in the mind of the spectator, and the object is consequently seen at *s*, at an equal distance behind the mirror as the object was before it. To make this clear, however, I shall present you with another diagram. The lines DC (fig. 2.) are the lines of incidence, CB are the lines of reflection, and these form equal angles on the surface of the polished mirror; so that all the rays coming from the object, and falling upon the mirror at C, will strike the eye at B, and the reflected image will thus become visible. Now no object can be seen that does not lie in a straight line from the eye, or, at least, appear to do so. The body D, therefore, when it comes reflected to the eye, will appear to lie in the straight line AA, which, since the angle of incidence is equal to that of reflection, will be exactly in the two lines DC and CB. The rays, therefore, going from D to C, will be seen at A, and consequently so will the picture. For as the rays have diverged in going from the object at DD, and diffused themselves upon the surface of the glass, they will be again converged into an equal focus, by the time they arrive at BB, and they will therefore paint the object at AA.

Hence we may learn, that if a man sees his whole image in a plane looking-glass, the part of the glass that reflects his image, is but one-half as long and one-half as broad as the man. For the image is seen, under an angle, as large as the life; the reflecting mirror is exactly half-way between the image and the eye, and therefore must make but an angle half as large as the image, or, in other words, it is just half as large as the image which is of the same size with the man. Thus the man AB (see fig. 3.) will see the whole of his own image in the glass CD, which is but half as large as himself. His eye, at A, will see the eye of the image at an equal distance behind the glass at E. His foot at B will send its rays to D; this will be reflected at an equal angle, and the ray will therefore go in the direction of FDA, so that the man will see his foot at F; that is, he will see his whole figure at EF.

It is thus that plane mirrors reflect. The nature of those which are convex or concave is a more difficult study, though the same law prevails with respect to them as with respect to the others. To understand the principles on which they act, it is necessary to call to your recollection what was said in the former lecture on spherical surfaces. All curves or arches are segments or pieces of circles, and may be considered as composed of a number of small flat planes, lying obliquely to one another. Parallel rays, therefore, striking an object opposed to them in this position, will strike it more or less obliquely. Thus in fig. 4, the rays *a, b, c, d*, which would fall perpendicularly on a flat surface, strike obliquely upon that which is opposed to them; and instead of being reflected parallel, are reflected divergent. For the same reason convergent rays would be reflected less convergent by such a surface as this, and divergent rays would be rendered still more divergent towards *e* and *b*. Fig. 5, you see, is the reverse of the preceding, and it serves very well to represent the effects of a concave mirror. By this you must perceive that the parallel rays *a, b, c, d*, which would have been reflected parallel by a plane mirror, are made to converge, because, instead of striking this mirror in a direct line, they strike it obliquely; and you may easily conceive that, by the same rule, convergent rays will

will be reflected still more convergent, and divergent rays will be made to converge less.

As by a mirror of the convex kind convergent rays are rendered less convergent, you will easily comprehend why objects are diminished by it. By the rays being made less convergent, the visual angle is diminished; for, you know, we see every object in the line in which the rays of light last approached the eye. By the same rule, a concave mirror magnifies or enlarges the image of an object, for the visual angle is enlarged or rendered more obtuse, and consequently the image is magnified in proportion to the curvature of the concave surface.

To prove what I have just now laid down with respect to convex mirrors, in fig. 6, ab is a dart, which is seen in the convex mirror cd . Now though rays issue from the object ab in all directions, as was explained in the twelfth lecture, fig. 2, yet it is seen only by means of those which are included within the space between o and n , because it is only those which can be reflected to the eye at r . Now you will easily perceive that if these rays had gone forward in the direction in which they were proceeding, they would have united at p , and the object would have been seen of its full size. As it is, however, the rays are reflected less convergent than they were in their natural course, and the angle orn , being less than the angle abp , the image at s appears smaller than the object, and nearer to the surface of the mirror. The reason of this last effect has been already explained, when I said that objects are rendered visible not by a single ray, but by pencils of divergent rays proceeding from every point of the object. Suppose, therefore, G (fig. 7.) a radiant point of any object, from which a pencil of divergent rays proceeds, and falls on the convex mirror ab . These rays (agreeably to the rule laid down above, that convex mirrors cause divergent rays to diverge still more) will be rendered more divergent, and will have their virtual or imaginary focus at g , that is, much nearer to the surface of the mirror than if it was plane.

For these reasons a person looking at his face in a convex mirror will see it diminished. Thus, in fig. 8, though rays proceed from every part of the face, it is only the rays that

touch the mirror within the space between c and r that can, agreeably to the great law of reflection, (the angle of incidence being equal to the angle of reflection) be reflected to the eye. The rays c and r being therefore rendered less convergent (as in the former instance in fig. 6) he will see the chin along the line $or s$, and the forehead along the line on , and the angle of vision being thus diminished, all the rest of the features will be proportionably reduced. Large objects, however, placed near a convex mirror, will not only appear reduced but distorted; because, from the form of the glass, one part of the object is nearer to it than another, and consequently will be reflected under different angles.

Convex mirrors are at present a very fashionable part of modern furniture, as they exhibit a large company assembled in a room in a very small compass. Globes lined with amalgam used to be formerly hung up in the middle of a room, by which the whole company were exhibited, at one view, seated at a dinner-table, or dispersed about the room.

The phenomena of concave mirrors are still different. By them convergent rays are rendered still more convergent, and consequently the visual angle is enlarged. Their general effect is therefore to magnify. This will be sufficiently exemplified by fig. 9. In this, as in the former instance, a face is looking at itself; and I take the extreme of those rays which can be reflected to the eye, one from the forehead and one from the chin. These lines, ac and mn , are reflected to the eye at o , which consequently sees the image in the lines of reflection, and in the angle odq , and therefore evidently magnified beyond the natural size, and at a small distance behind the mirror.

This effect, however, will only take place when the eye is between the mirror and its principal focus, that is, the focus or point, where rays falling parallel or perpendicular on the glass, will unite after reflection; the point where the rays of the sun (which are always considered as parallel) will unite and burn: for a concave mirror acts as a burning glass. By the great law of reflection the principal focus of a concave mirror is at one-fourth of the diameter of that sphere, of which the concave surface is a section, which is therefore sometimes called the center of concavity. At this point

point the rays reflected from the mirror are converged and cross; and if the spectator's eye is beyond this point or focus, he will not see the image behind the mirror, but before it, a shadowy form, suspended in the air; but, from the crossing of the rays, it appears inverted.

In fig 10 *ab* is a concave mirror, *cd* is a hand held up before it. The image therefore you see is not placed behind the mirror, as happens in every other case, but the hand seems to hang suspended in the air at *m*. The reason of this very extraordinary and striking phenomenon is to be found in what was already intimated. Objects are rendered visible not by single rays, but by pencils of divergent rays, proceeding from the different points of the object. If these pencils of divergent rays should happen by any cause to be united, the object will in that point cease to be visible. This happens in the focus of a concave mirror, where by the law of reflection they are all united. If the eye, therefore, is placed in that point, it will see nothing of the image. It must recede to a sufficient distance to permit the rays to cross and again become divergent. In that case the image will be seen not behind the mirror at the virtual or imaginary focus, as it is in plane and convex mirrors, but suspended in the air between the eye and the real focus, for every image is seen about that place, whence the pencils of rays begin to diverge. In plane mirrors the rays have only diverged from the luminous points of the object itself; and as the eye cannot see behind, it sees the image in a straight line, but joins the line of incidence and that of reflection together. The image therefore appears at the same distance behind the glass as the object stands before it. In concave mirrors the case is entirely different; for in them there is an actual focus, where the rays are converged to a point, and from which they begin again to diverge. The image is therefore seen there but in an inverted state, for reasons already given. Thus in fig. 10, the rays *cd* go diverging from the two opposite points of the object; by the action of the mirror they are again made to converge to a point at *o*, where they cross, and again proceed divergent to the eye.

It will, however, render this interesting part of optics still clearer, if I present you with another diagram, similar

68 *Of the Reflexibility of Light, or Catoptrics.*

similar in some degree to the preceding. In fig. 11, $A c B$ is a concave mirror. The center of concavity is at C . From the point of the dart DE we suppose a pencil of divergent rays emitted, which you see touch the mirror at $A c B$. These rays are reflected, according to the general law of reflection (the angle of reflection being equal to the angle of incidence) which is proved by drawing the dotted lines CA , Cc , CB , from the center of concavity to the points from which these rays are reflected, which are therefore perpendiculars to the surface of the mirror. The angle CAd , or the angle of reflection, you see is equal to DAC , the angle of incidence, and so you will find it of the rest. The reflected rays then, you see, converge to a point, and form the extremity of the dart (which is now inverted) at d . In the same manner every other pencil of rays emitted from the object will be converged at or near the principal focus, and the image will be formed at ed . For you will perceive that if the rays Ef , Eg , Eb , were continued to the mirror, they would be reflected and converged at e , forming the opposite extremity of the dart. When the object is farther from the mirror than the center of concavity C , the image will be nearer the mirror and smaller than the object; when the object is nearer than the center of concavity, the image will then be more remote and larger. Thus if ed was the object, DE would be the reflected image.

It is not many years since a person derived considerable emolument from exhibiting in the metropolis some optical deceptions of this kind with concave mirrors. A ghastly apparition was sometimes made to meet the ignorant spectator, and from its shadowy appearance it was evidently nothing human; sometimes a hand was held out in the air with every possible mark of friendship, but when he approached to unite it with his own, a drawn sword was instantly presented to his breast. A nosegay or a piece of fruit was offered, but when he attempted to seize it, a death's head snapped at him.

I mentioned that concave mirrors were frequently used as burning-glasses, and a curious experiment may be made by means of them, to shew that common culinary fire may be reflected in the same manner as the rays of the sun. If two
 . large

large concave mirrors are placed opposite to each other, as in fig. 12, at almost any distance, and a red-hot charcoal is held in the focus of one at *a*, and a match, or any combustible matter, in the focus of the other at *b*, the match, &c. will be presently set on fire, by the reflected flame of the charcoal.

You have seen, I dare say, the distorted figures which are sometimes painted on boards, and exhibited in the shop-windows of opticians. They look like a mere splash of a painter's brush, but when a mirror of a cylindrical or conical form is set in the middle of the board, a beautiful figure is reflected from it. This shews that what appears to be a casual dash of paint on the board, is, in fact, a figure drawn with the nicest mathematical precision. When the image is to be rectified by a cylindric mirror, the lines are only extended, and, by the great law of reflection, the rays from the picture are reflected by the mirror less convergent, and the figure is consequently rectified. A little consideration on this subject, applying the principles which have been laid down in the course of this lecture, will easily enable you to see the theory on which these mirrors act, particularly if you have the objects before you, without which, indeed, an infinity of words must be expended in describing and explaining them.

NATURAL HISTORY.

THE OWL.

THE third genus in the first order of birds, according to the system of Linnæus, is the owl. The characters of this genus are, the bill hooked, and covered at the base with bristles, instead of that membranous substance called the cere in other birds of prey. The nostrils of owls are oblong, and their tongues cloven at the end; the heads are, in every species, remarkably large, and in some the large aperture of the ear is covered with a tuft of feathers resembling horns; their claws are hooked and sharp; and the outer

outer toe capable of turning backward like that of the parrot.

The eyes of these birds distinguish them from every other genus; they are large and protuberant, and possess such exquisite sensibility, that they are dazzled by the full light of day, and altogether overpowered by the rays of the sun. "In these birds," says Goldsmith, "the pupil of the eye is capable of opening very wide, or shutting very close; by contracting the pupil, the brighter light of the day, which would act too powerfully on the sensibility of the retina, is excluded; by dilating the pupil, the animal takes in the more faint rays of the night, and thereby is enabled to spy its prey, and catch it with greater facility in the dark."

All the different species of owls are, however, not equally distinguished by sensibility in the organs of sight; and consequently not equally overpowered by the light of day. The great owl of North America takes considerable flights, and is sometimes seen chasing its prey successfully in broad day; while the common barn owl, far from being able to encounter the full rays of the sun, possesses such sensibility of vision, that it catches mice even in the middle of the night. This difference in the sight of owls regulates the time of their depredations; such as nearest resemble other birds, issue from their retreats immediately after the setting of the sun; the more quick sighted remain concealed till further in the evening, when they fall with destructive success on the smaller birds, in the midst of that season of repose.

THE GREAT HORNED OWL,

By some has been called the eagle owl; and at first sight it appears nearly of that size, from the great quantity of feathers with which it is covered. It is, however, different from the eagle in every proportion, the head being larger, and all the parts of the body less than in the birds of that genus. The breadth of its wings is about five feet; the head disproportioned to the size of the body; and the cavities of the ears are large and deep. On each side of the head there rise two tufts of feathers resembling horns, two inches and an half long, which the animal can erect or fold down at pleasure.

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There are several varieties of the great owl; the Italian and Virginian are particularly described by Brisson; but their difference is too minute to be ascertained without a view of each. This bird has a frightful cry, by which he interrupts the silence of the night. He inhabits rocks and old towers, the most retired he can find. He chases hares, rabbits, moles, and mice, which he swallows entire; but the hair, bones, and skin, which resist the action of the stomach, he vomits up in round balls. There is no bird more successful in taking its prey, or whose young are so abundantly supplied with food. He often wages war with the kite, and deprives him of his booty: as he bears the light better than the other nocturnal birds, he defends himself with great bravery against the crows, which sometimes pursue and attack him by day.

THE LONG-EARED OWL,

Is found in Britain, and is much less than the former, being only three feet and an half in breadth. Its horns are much shorter, and rise above the head only an inch, more resembling the ears of quadrupeds than their horns. They consist of six feathers, variegated with yellow and black. The breast and belly are of a dull yellow, marked with slender brown streaks pointing downwards. Varieties of this kind of owl are to be found all over Europe, and in many places of America. These birds are seldom at the trouble of building a nest; their eggs and their young have always been found in the nests of pies or kites, that were deserted by their original owners. Their young are generally four or five in number; and white when protruded from the shell.

Its ordinary habitation is in the walls of old buildings, in the cavities of rocks, in the hollow of decayed trees, chiefly in remote situations. It but rarely descends from these retreats into the plain. When attacked by other birds it makes a vigorous defence with its claws and beak; and when assailed by an enemy too powerful, it turns upon its back to have the more ready use of these means of protection.

THE LITTLE HORNED OWL,

Is easily distinguished from the two former, by its small size, being only seven inches long; and by the ears, which only rise about half an inch from the head, and are composed of a single feather. The head is much smaller in proportion to the body than those of the two last described; and the feathers are more beautifully variegated with brown, black, and red. The far greater part of this species emigrate during winter. They assemble in flocks, about the end of summer, and take their departure nearly at the same time. They pursue the field mice in multitudes together, and in France and England are of great service in destroying these pernicious vermin.

THE BROWN OWL,

Inhabits the woods by day, and during the night it is very clamorous. Above it is of an ash-colour, variegated with white and black spots; below it has black bars across and longitudinally. Its wings extend beyond the extremity of the tail; and its breadth, when flying, is three feet three inches.

This species devours small birds, which it swallows entire. It returns in the morning, after the chase is over, and conceals itself in the thickest coppices, or, if the weather is severe, in the hollow of a tree.

THE TAWNY OWL.

The colour of this kind is sufficient to distinguish it from every other. The back, head, and coverts of the wings are of a fine tawny red, elegantly spotted, and powdered with black or dusky spots of various sizes. The breast and belly are yellowish, mixed with white, and marked with narrow black streaks pointing downwards. It is described by Linnaeus as an inhabitant of Sweden; it is also found in America and the West Indies, with such small varieties as the climate is found to produce.

Natural History.



1. Common Buzzard.

2. Gyr Falcon.

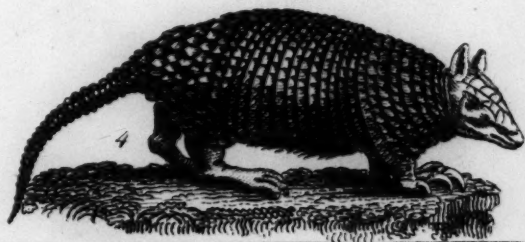
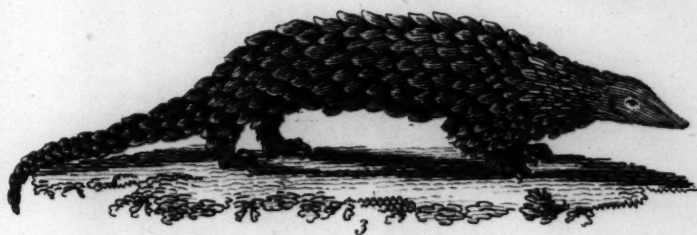
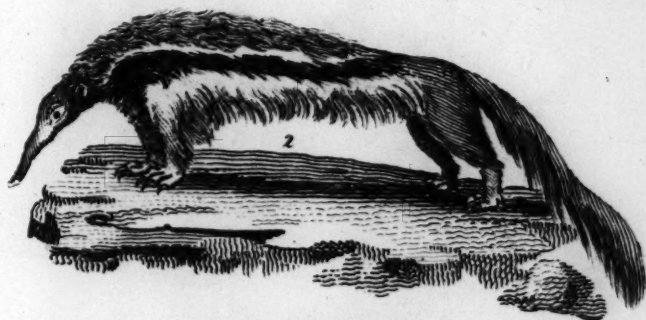
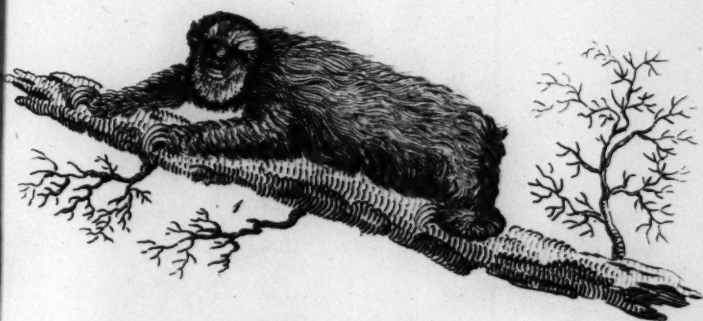
3. Fishing Hawke.



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Natural History.



1.The Sloth.

2.The Ant eater.

3.The Manis.

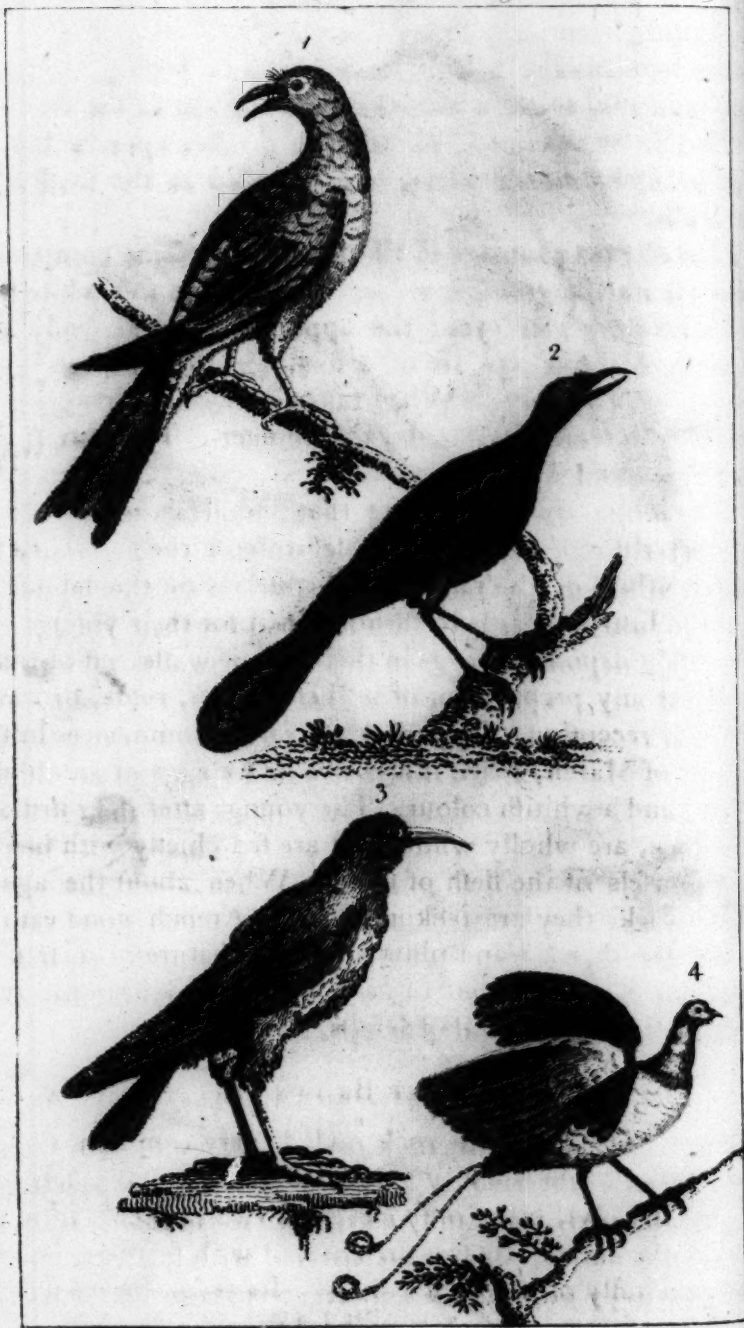
4.The Armadillo.

Natural History.



1. Buff Crested Woodpecker.
2. Barbet Red Crowned.
3. Pied Hornbill.
4. Indian Bee Eater.

Natural History.



1. Roller.
2. Boat Tailed Grackle.
3. Cornish Chough.
4. King Bird of Paradise.

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THE WHITE OWL,

Is the common barn owl: it is almost a domestic bird, inhabiting barns, hay-lofts, churches, and even villages. It utters continually a disagreeable kind of hissing, or harsh and mournful cries, which the good women in the country believe to be ominous; for when it perches upon a house, and utters its doleful notes, it is regarded as the messenger of death.

The elegant plumage of this bird makes some compensation for its disagreeable voice. A circle of soft white feathers surrounds its eyes: the upper part of the body and coverts of the wings are of a fine pale yellow; the lower part is wholly white. When taken old it refuses all food, and dies in ten or twelve days of hunger. They are found in Europe and America.

The white owl, possessing that indolence which seems characteristic of this tribe, is destitute of the ingenuity by which others of the race avail themselves of the labour of more industrious birds to furnish a nest for their young. It carelessly deposits its eggs in the holes of walls and of trees, without any preparation of withered grass, roots, or leaves for their reception. Its period of ovation commences in the month of March, when it lays five or six eggs of an oblong shape, and a whitish colour. The young, after their first appearance, are wholly white, and are fed chiefly with insects and morsels of the flesh of mice. When about the age of three weeks they are reckoned by the French good eating. They are then fat and plump, but the nature of their food does not seem calculated to improve their relish, for they frequently drink the oil of lamps.

THE GREAT BROWN OWL,

Sometimes called the rock owl, is very common, though rarely seen in the vicinity of our habitations. It is less than the tawny owl, being only eleven or twelve inches from the bill to the claws: its legs are covered with feathers, and the bill is wholly of a brown colour. Its favourite residence is in rocks, quarries, and ruined edifices, in the most retired situations: though fond of solitude, it is almost never to be

found in woods or in the hollow parts of trees. The peasants are commonly friendly to this bird, on account of its soft and plaintive note, which it varies according to the weather, and thereby becomes a faithful predictor of rain. It is also serviceable to them in many parts, by destroying the field mice, the enemies of their labours.

Like the bird last described, the great brown owl prepares no nest: but indiscriminately, in any hole, lays three white eggs perfectly round, about the size of those of a wood-pigeon. It is spread over all Europe: and, if we may credit Feuillée, over many parts of America.

THE LITTLE OWL,

Is one of the smallest of the race of owls, measuring only from seven to eight inches in length, and nearly of the size of a thrush. It is distinguished from the small horned owl, by having no prominent feathers at the ears like that bird; and by the regularity of its white spots upon the wings and body. It frequents, like other owls, the buildings and quarries, but differs from them considerably in the nature of its sight; and is not, strictly speaking, a nocturnal bird, for it is far more capable of enduring the rays of light than the rest of this tribe. It frequently exercises itself in the unproductive chase of the swallow; but is more successful among the mice, which it tears in pieces because unable to swallow them entire. It uses also a precaution peculiar to itself, of clearing away the hairs from its morsels, which the others devour, and afterwards vomits in the form of round balls.

The foreign birds allied to the tribe of owls are numerous and of various sizes.

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XIV.

THE LIFE OF BISHOP WILSON.

LORD BISHOP OF SODOR AND MAN.

“The memory of the just shall be blessed.”

THIS observation of the wisest of men is confirmed by the constant experience and the universal consent of mankind. Those persons who have rendered eminent

vice to their fellow-creatures by their piety and benevolence will always be remembered with gratitude, and their memories will flourish to the latest generations as the choicest blessings of heaven. It is pleasing to see virtue and religion exemplified in the conduct of a distinguished character; and it is of service to posterity that the actions of such a person should be recorded, that others may be disposed to imitate them. Men of this description "speak from their tombs;" and while the character and conduct of the wicked are suffered to perish, or are exhibited as beacons of caution, these shine as brilliant luminaries, to "guide our feet in the way of peace" to the realms of light.

These remarks will apply with peculiar force to the name of that good man whose memoir now engages the attention of our juvenile readers.

This most excellent prelate was born in the year 1663, at Burton, in the county of Chester. He received the rudiments of his education at the free school of Chester, whence he removed to the university of Dublin, where, though his allowance was no more than twenty pounds a year, he supported himself with great credit, which is to be attributed to his frugality and sobriety. His first intention was to have made physic his study, but he was dissuaded from this profession by Archdeacon Hewetson, by whose advice he dedicated himself to the church. He continued at the college till the year 1686, when, on the 29th of June, he was ordained deacon. The ordination was held for him alone, on the day of consecration of the church of Kildare, in the presence of a very numerous congregation; and our pious divine ever after kept the anniversary of it holy, and poured forth his heart to God in a particular prayer on the occasion.

Soon after this he quitted Ireland, and went to be curate to his maternal uncle, who was rector of Winwick, in Lancashire, where his stipend was only thirty pounds a year; but being an excellent economist, and having the advantage of living with his uncle, this small income was not only sufficient to supply his own wants, but it enabled him to

administer to the wants of others; for which benevolent purpose he set apart one-tenth of his income.

In 1692 he was appointed domestic chaplain to William Earl of Derby, and tutor to his son James Lord Strange, with a salary of thirty pounds a year. He was soon after elected master of the alms-house at Latham, which brought him twenty pounds a year more. Having now an income far beyond his expectations, he set apart one-fifth of it for pious uses, and particularly for the poor: thus sanctifying every blessing of Providence to the good of his fellow-creatures. In short, as his income increased, he increased the proportion of it which was allotted to the purposes of charity. At first he set apart a tenth, then a fifth, afterwards a third, and, lastly, when he became a bishop, he dedicated the full half of his revenues to pious and charitable uses.

He had not been long chaplain to Lord Derby before he was offered the valuable living of Buddesworth, in Yorkshire, which he refused to accept, as being inconsistent with the resolves of his conscience, Lord Derby choosing to retain him still in his family as tutor to his son.

So excellent was his character, and such a high opinion had his noble patron of him, that, in 1697, he promoted him to the bishopric of Sodor and Man, the only episcopal see in these kingdoms which is not in the gift of the crown.

But so humble and unambitious was this extraordinary man, that it was with great difficulty he could be brought to accept the episcopal office. That preferment which others court with so much eagerness, and pursue by such various arts, he shunned with a spirit which was evidently above the world and all its honours. The command of his patron, however, in this instance, could not well be disobeyed, and therefore he accepted a charge which he enjoyed, through the divine goodness, for the long period of fifty-eight years.

In 1698 he married Mary, daughter of Thomas Patten, Esq. of Warrington, in Lancashire; by which lady, who survived her marriage about six years, he had four children, one of whom, Dr. Thomas Wilson, became prebendary of Westminster.

The annual receipts of the bishopric did not exceed three hundred pounds in money. Some necessaries in his house, as spices, sugar, wine, books, &c. must be paid for in cash; distressed or shipwrecked mariners, and some other poor objects, required to be relieved with money; but the poor of the island were fed and clothed, and the house, in general, supplied from his demesnes, by exchange, without money. Such of the poor as could weave or spin found the best market at Bishop's-court, where they bartered the produce of their labour for corn. Taylors and shoemakers were kept in the house constantly employed, to make into garments or shoes that cloth or leather which the bishop's corn had purchased; and the aged and infirm were supplied according to their several wants.

A pious and learned divine was wont to relate the following pleasing and singular instance of the bishop's attention to some aged poor of the island. As he was distributing spectacles to some whose eye-sight failed them, this gentleman could not but express his surprize, as he well knew that not one of them could read a letter. "No matter," said the good bishop, "they will find use enough for them; these spectacles will help them to thread a needle, to mend their clothes, or, if need be, to keep themselves free from vermin."

The care which he took of his diocese was very great and truly apostolical. He kept his clergy to their duty, and set them, in his own conduct, the best of examples. He preached frequently, and that in a plain and familiar manner, suited to the meanest capacities. As a specimen of his style we shall make one extract from his printed sermons.

"You will remember, that every man is your neighbour and your brother, who may be benefited by your love. That God is our common father, and that all we are brethren. That we are all members of the same body, of which Jesus Christ is the head. That God has so ordered matters, that the members of this body should depend upon one another. That the poor should depend upon the rich for their subsistence; and the rich, whatever they think of it, shall receive a greater advantage from the prayers of the

poor! You will then call to mind how you are to express your love to your neighbour. The command says, *You are to love him as yourself.* You know, without a teacher, how you love yourself; that you wish and take satisfaction in your own welfare and prosperity. That you are sorry when any evil or mischief befalls yourself. You do not love to have your own faults aggravated, or your good name abused; and how ready you are to find excuses for your own mistakes. In short, you know very well how you would have others to shew their love for you. And that it is no small comfort for the ignorant and unlearned, that their duty is contained in so few words, and that they can easily understand it, by considering how they love, how they would be dealt with themselves!"

The bishop was at great pains and expence in causing the Bible to be translated into the Mank's language, or that which is commonly spoken in the Isle of Man. He also composed several excellent religious books upon practical subjects, which have been universally approved of among pious christians, and have doubtless proved of extensive utility. But his fame rests not upon the value of his writings. It has a better basis, even those good works which will be remembered through ages of eternity. Yet notwithstanding his extraordinary sanctity, and his high station, this good man was not without his enemies and his trials. In the year 1720 a very singular circumstance occurred, which one would hardly believe could have happened in any part of the British dominions. Mrs. Horn, wife of Captain Horn, governor of the island, having accused Mrs. Puller, a widow lady of good character, with being guilty of fornication with Sir James Pool; Archdeacon Horrobin, to please Mrs. Horn, did in consequence most improperly refuse Mrs. Puller the sacrament. The accused parties then had recourse to a mode pointed out by the constitutions of the church to prove their innocence, namely, by oath before the bishop, by whom they were cleared of the charge, and Mrs. Horn was sentenced to ask their pardon for the slander. This she refused to do, and treated the bishop and his authority with contempt. For this indecent disrespect to the ecclesiastical laws she was excluded

cluded the sacrament till atonement should be made. The archdeacon, who was chaplain to the governor, out of pique to the bishop, or from some unworthy motive, received her at the communion, contrary to the custom and orders of the church. An insult to himself the bishop would have forgiven, but disobedience to the church and its laws he could not allow of. He considered it as the oblation of wrath, rather than the bond of peace, and at length suspended the archdeacon, who in a rage threw himself on the civil power; and the governor, under pretence that the bishop had acted illegally, fined him fifty pounds, and his two vicars-general twenty pounds each. These fines they refused to pay, upon which the governor committed them to the prison of Castle Rushin, where they were kept closely confined two months, and were then released by order of the king in council.

After this he suffered no molestation, but continued to live with his people to his death, in the same course of piety, diligence, and benevolence. An English bishopric was several times offered him, but this apostolic man constantly refused it, looking upon himself as bound by Providence to his little diocese.

There is an anecdote of his lordship and Cardinal Fleury, which does equal credit to them both. The Cardinal wanted much to see him, and sent over on purpose to enquire after his health, his age, and the date of his consecration, as they were the two oldest bishops, and he believed the poorest in Europe; at the same time inviting him to France. The bishop sent the cardinal an answer, which gave him so high an opinion of him, that the cardinal obtained an order that no French privateer should ravage the Isle of Man.

This good prelate lived till the year 1755, and then departed to his reward at the advanced age of 93.

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF CHINA.

WE shall commence our description of the manners and customs of China, with some account of the government of that country.

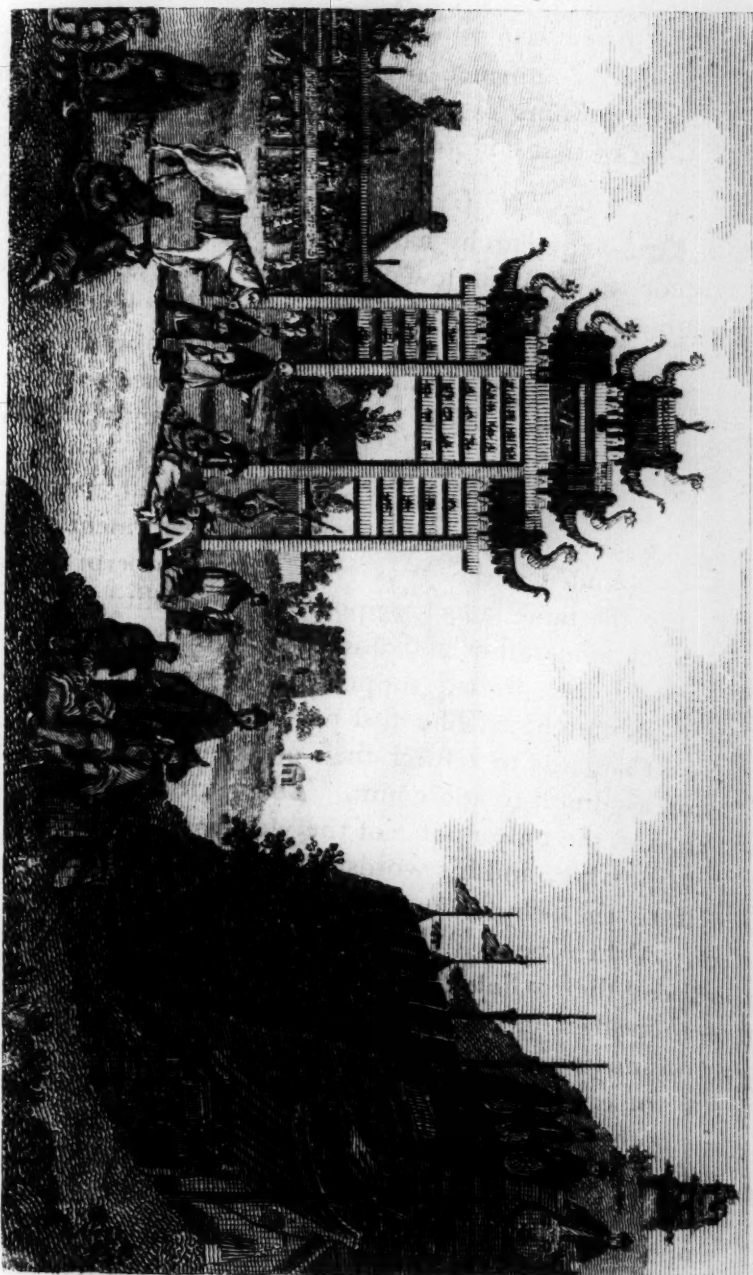
Of the Government of China.

The Chinese monarchy has existed, if we may believe their own accounts, with but few changes, for nearly 4000 years. Before their connection and commerce with the Dutch they had never heard of a republic; nor can they now comprehend how a great nation can be regularly governed without a king. They have a great abhorrence to tyranny and oppression, and believe that the obligation which is laid on their kings not to abuse their power, is the best means of confirming and establishing them in their government.

An unbounded authority is given to the emperor by the laws; but the same laws lay upon him a necessity to use his power with moderation and discretion, which are the two props which have so long supported the great fabric of the Chinese monarchy. The first principle instilled into the people at large, is to respect their prince with so high a veneration as almost to adore him. They stile him the son of heaven, and the only master of the world. His commands are indisputable, and his words sacred. He seldom shews himself to the people, and is never spoken to but on the knees. When he is ill the palace is full of mandarines, who spend their whole time, in a large court, offering petitions to heaven in behalf of their prince's cure. No weather, no inconvenience, can excuse them from this duty: so long as the emperor is in pain or in danger the people seem to fear nothing but the loss of him.

Self-interest is no small occasion of the great respect which is shown him by his subjects; for as soon as he is proclaimed emperor, the whole authority of the empire is in his hands, and the fortunes of his subjects are entirely at his disposal: (1.) All places of honour and profit are in his gift. Honesty, learning, experience, and gravity of behavior, are
said

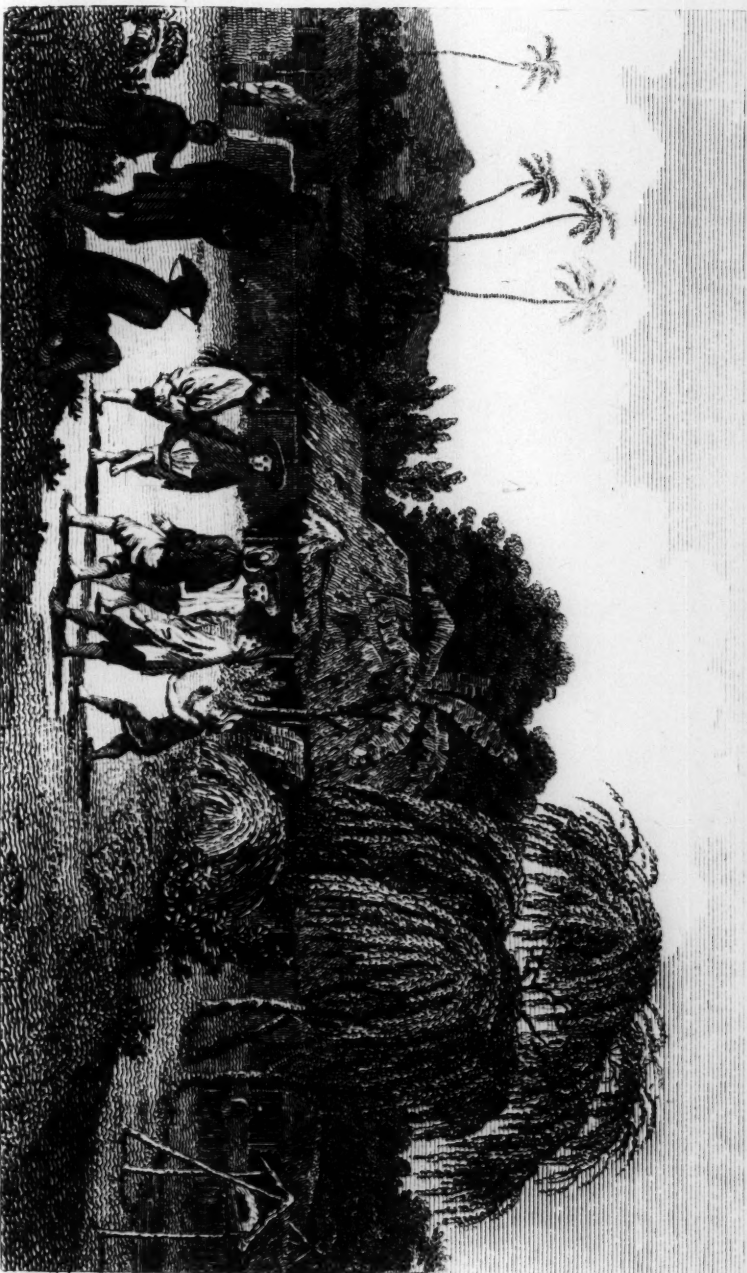
Warriors & Customs of Nations.



THE PALACE OF THE EMPEROR, CALLED A TRIMITHAL, ARCH of a CHINESE FOR TRES.

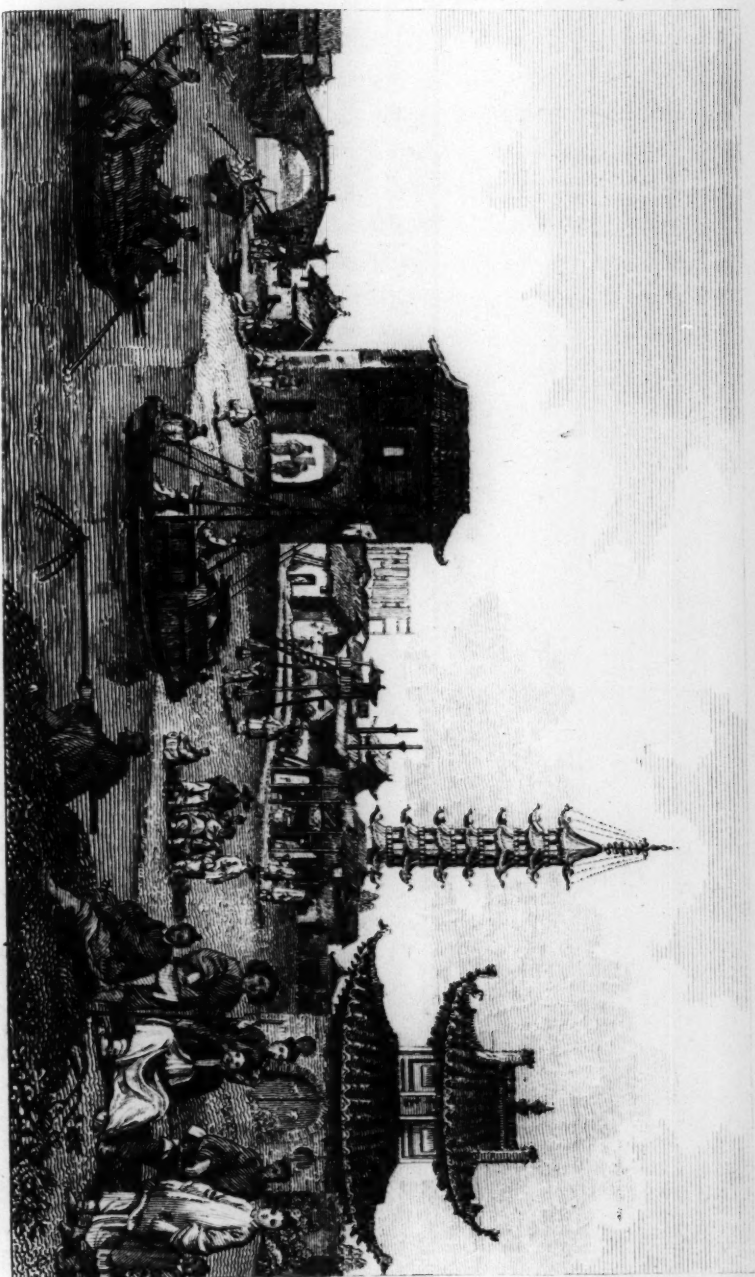
NATIVES OF COCHIN CHINA playing at SHUTTLE COCK with their FEET.

Hammel's Customs of Nations.



NATIVES OF COCHIN CHINA playing at SHUTTLE COCK with their FEET.

Hansen's Customs of Nations.



VIEW of the SUBURBS of a CHINESE CITY.

upon them, after their deaths, thus at home, and
ward or punishment of their families. (25)
his subjects, which is exacted even after the death
(26). The grave then does not put an end to his power.
China never overlooks any civil commission, or
the choice does not fall according to tendency, but
not, however, very common, but is frequently
for virtue and understanding. Examples of this
successors, persons of great birth and talents, but
able to support the dignity of a crown, have chosen
there have been no less than thirty, finding none of them
royal family, but from among his other subjects,
choosing his successor, which he may select from
the Chinese government, is the same as in Europe.
emperor. (27) Another instance of similar
magistrates, are not obligatory on them, and
hand, the sentence pronounced by the emperor
not the least delay in executing them: while
are unavoidable, and his power in courts and
honorable to the king. In the judgments passed
and upon what terms he pleases, provided they are
war belongs to the emperor, no less than
betwixt or between. (28) The emperor may
three, from then until this day, I have not
every year of course, with a thousand, sometimes
his power is less than that of a monarch
the pressing want, and relieve the necessities
can say what takes place upon such occasions.
sector, who either confirms or rejects it, as he
provinces, but the sentence is always retained
subjects. Officers are appointed and used in
an absolute power over the civil and military
economy, those who are appointed in the
the choice of an emperor is made by the

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said to be the only qualifications to insure success to the candidate for any post of trust or dignity. As the emperor has the sole choice of all officers of state, so he dismisses without ceremony those who are deficient in their duty. (2.) He has absolute power over the lives and properties of all his subjects. Offenders are arraigned and tried in the different provinces, but the sentence is always presented to the emperor, who either confirms or rejects it, as he pleases. He can lay what taxes he thinks fit upon his subjects to supply the pressing wants, and relieve the necessities of the state. This power is seldom made use of, and there is a custom every year of exempting a province, sometimes two or three, from their usual taxes, if they have suffered through sickness or dearth. (3.) The right of making peace and war belongs to the emperor; he may make what treaties, and upon what terms he pleases, provided they are not dishonourable to the kingdom. The judgments passed by him are irrevocable, and his sovereign courts and viceroys dare not use the least delay in registering them: while, on the other hand, the sentences pronounced by their parliaments or other magistrates, are not obligatory till they are confirmed by the emperor. (4.) Another singular circumstance belonging to the Chinese government, is the right that the emperor has of choosing his successor, which he may elect not only from the royal family, but from among his other subjects. And there have been emperors who, finding none of their family able to support the dignity of a crown, have chosen for their successors persons of mean birth and fortunes, but eminent for virtue and understanding. Examples of this nature are not, however, very common, but it frequently happens that the choice does not fall according to seniority, which in China never occasions any civil commotions or rebellions. (5.) The grave itself does not put an end to his power over his subjects, which is exercised even upon the dead, whom he disgraces or honours, when he has a mind either to reward or punish themselves or their families. He confers upon them, after their decease, titles of honour; canonises them as saints, or, according to their language, makes them naked spirits. Sometimes he builds them temples; and, if their administration of public affairs has been very beneficial,

cial, or their virtues remarkably eminent, he commands the people to honour them as gods. The emperor has ever been looked upon as the chief priest and principal servant of religion; and there are ceremonies and public sacrifices which he alone is thought worthy to offer up to the great Creator of heaven. (6.) The emperor may change the figure and character of the letters, abolish characters already received, or form new ones. He may likewise change the names of provinces, of cities, of families. He may forbid the use of any commonly received expressions or modes of phrase, and introduce others which have hitherto been esteemed obsolete and uncouth.

Notwithstanding these unlimited powers, yet there are three circumstances which, if an emperor has any regard to his reputation, will prevail with him to govern by the rules of strict justice. The first of which is, that the old lawgivers have always made it a standing maxim, that kings are properly the fathers of their people, and hence the title most honourable and esteemed among them is that of *ta-fou*, or grandfather. Their philosophers constantly maintain that the state is but a large family, and that he who knows how to govern the one, is the best capable of ruling the other. And no virtues will compensate in a prince the want of affection for his people. Secondly. Every mandarine may tell the emperor of his faults, provided it be done in a manner agreeable to the veneration and profound respect which is due to him. Thirdly. If the emperors have any regard for their reputation, the manner in which their histories are written is alone sufficient to restrain them within the bounds of rectitude. A certain number of men, who, being chosen on account of their learning and impartiality, observe with every degree of exactness all the actions and even words of their prince; each of these persons by himself, and without any communication with the others, sets down on loose slips of paper the various occurrences as they happen, and then puts these papers through a chink, into an office set apart for this purpose. In these papers both the emperor's virtues and faults are set down with liberty and impartiality. And in order that neither fear, on the one side, nor hope, on the other, may bias these biographers, this office

is never opened during that prince's life, or while any of his family sit on the throne. When the crown goes into another line, which often happens, all these loose memoirs are collected and compared, and a true history of the emperor written from them, to propose him as an example to posterity, if he has acted wisely, or to expose him to common censure and odium, if he has been negligent of his own duty and the public welfare.

In the common forms of government the emperor has two sovereign councils; the one is called the *extraordinary* council, and is composed of princes of the blood only; the other, called the council in *ordinary*, has, besides the princes, several ministers of state. Besides these there are at Peking six sovereign courts, whose authority extends over all the provinces of China. Each of these courts have different business assigned them, but affairs of great importance cannot be concluded and brought to maturity without the mutual concurrence of all of them. Thus in the instance of war; the number of troops, the qualities of their officers, the marching of the armies are provided for by the *fourth* court, but the money to pay them must be had of the *second*.

The provinces are under the inspection of two kinds of viceroys. One sort has the government of one province only; the others have the jurisdiction of two, three, or four provinces. The power of the viceroys is very extensive, but counterpoised by that of the great mandarines about him, who may accuse him, when they are satisfied that it is necessary for the public good. The people have also the right of petitioning the emperor against their governors. And the more effectually to protect private persons, whose complaints cannot always reach the ears of the prince, secret spies, persons of known wisdom and reputation, are dispersed up and down in every province, who inform themselves in what manner the mandarines behave in the execution of their offices, and bring those to punishment whom they discover to be guilty of acts of oppression. Sometimes the emperor himself visits his provinces in person, for the purpose of doing justice to all his subjects. In one of these excursions he met with an old man weeping bitterly, and upon enquiring the cause of his tears, the man,

man, ignorant of the dignity of the person to whom he was speaking, replied, "I have but one son, who was the comfort and support of my life; of him I have been deprived by the power of a mandarine, and thus rendered miserable during the remainder of my life: for how can I, poor and friendless, oblige so great a man as he to make me restitution." "This may not be so difficult as you imagine," said the emperor; "lead me to the mandarine's house:" which being done, and the mandarine convicted of the violence of which he was accused, the emperor condemned him to instant death, and gave to the afflicted father the office of the criminal, at the same time strictly charging him to execute it with equity, lest he also should be made an example to others.

(*To be continued.*)

THE ANTIENT AND MODERN HISTORY OF NATIONS.

ANCIENT SACRED HISTORY.

SCRIPTURE history being so much interwoven with the different parts of ancient history in general, we intend, in the present number of our Preceptor, to give a rapid sketch of the principal epochas into which the Old Testament history is usually divided. In doing this, we trust, that we shall be performing a work that will be deemed useful and interesting to our young readers, who are, in most cases, expected to be conversant with the scriptures at an early period of their studies.

The FIRST remarkable period of the Old Testament history contains the age of the Antediluvian patriarchs, which includes about one thousand six hundred and fifty-six years, from the creation to the deluge. The most remarkable characters who flourished during this space of time, were our first parents Adam and Eve, who, for disobedience to the divine command, were banished from the garden of Paradise. From these descended Cain, whose name is in-
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famous on account of the murder of his brother Abel, and Seth, from whom the race of patriarchs descended. Under the patriarchal government every father had the sole government of his family, and exercised the power of distributing justice and inflicting punishment, according to his own will, upon those who had been indebted to him for existence. Enoch is another remarkable character that flourished in this period, who, on account of his piety, was translated from earth to heaven. Methusalah is celebrated on account of his great age; and Noah for having lived both before and after the flood. The antediluvian fathers are supposed to have been ignorant of arts and letters, but the great extent of their lives must have enabled them to obtain considerable knowledge of nature and of the business of agriculture. It appears also that the art of building* and music, and some of the handycraft arts were known and practised in this period.

The *second* period of antient sacred history includes eight hundred and fifty-seven years, or the space which passed from the deluge to the going forth of the Israelites out of Egypt. Noah with his family entered the ark in the year before Christ 2348: and we are informed that when the waters asswaged, the ark rested upon Ararat, a mountain of Armenia. By this event the earth is supposed to have undergone considerable alterations; the spoils of the sea, such as the bones of fish, &c., which are frequently found on the tops of mountains and in the midst of rocks, do not merely render this supposition highly probable, but demonstrate the certainty of such an event as the deluge having taken place at some period of the world.

Noah had three sons, Shem, Ham, and Japhet, whose descendants peopled the earth. Europe, with a part of Asia, fell to Japhet; the rest of Asia to Shem, and Africa to Ham. Of the posterity of Ham and Japhet we have no certain accounts; but the scriptures have given us a very ample history of the descendants of Shem, the most remarkable of whom are Abraham, Isaac, Jacob, and Joseph.

Abraham was siled the father of the faithful. He passed

* Gen. iv. 17. 21. 22.

into the land of Canaan, called the holy land, a district of Asia, bordering on the Mediterranean Sea, which has been since inhabited by Jews, Christians, and Mahometans, and at present is subject to the Turks. Circumcision was instituted by Abraham, by which his posterity was distinguished from other nations. Isaac, the only son of Abraham by Sarah, was father to Jacob.

Jacob, afterwards called Israel, left twelve sons, the founders of the twelve tribes of Israel. With the interesting history of Joseph all our readers are doubtless acquainted. After Joseph's death the offspring of Jacob increased in Egypt to such a degree as to alarm the reigning monarch, who commanded the destruction of every male infant, but Moses was saved by the interposition of Pharaoh's daughter.

Moses was employed in executing the divine command for freeing the Israelites from Egyptian bondage. The fate of Pharaoh and his army has been already described in our history of Egypt. The Israelites continued travelling in the deserts of Arabia forty years, when they entered into the promised land under the conduct of Joshua, which closes the second period of antient sacred history. The circumstances which deserve particular notice in this period are the institution of the rite of circumcision by Abraham; and the promulgation of the written law by Moses from Sinai, which is a mountain in Arabia Petrea, near the Red Sea, and about two hundred and sixty miles east of Cairo.

The *third* period of sacred history commences with the going out of the Israelites from Egypt, and extends to the time of the kings, a period of three hundred and ninety-six years. During this period the people of Israel were governed first by Joshua their leader, then by the elders, and afterwards by judges, who were extraordinary magistrates, appointed for the purpose of defending the people against their enemies;—of promulgating the law;—and of preserving the purity of divine worship. For the history and transactions of these we refer the reader to the books of Joshua and Judges in the Old Testament.

The character of Samuel, the last of the judges of Israel, deserves to be had in remembrance; he was an excellent magistrate, and, upon his death, the people fell again into
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the practice of idolatry, and were in consequence of it oppressed and kept in bondage eight years, by Chusban, a king of Mesopotamia. This whole history exhibits striking and remarkable instances of the inconstancy of the Hebrews, and shews that their piety varied in proportion to the prosperity or adversity of their worldly concerns.

The *next* period of this history begins from the government of the Israelites, in the year B. C. 1095, by kings, and continues to the end of the Babylonish captivity, which includes a space of five hundred and fifty-nine years.

The principal fact that happened during the history of the kings, is the schism that happened in the reign of Rehoboam, when the people were divided into two parts, and thence into two distinct kingdoms, Judah and Israel. Three kings only reigned over Israel in its undivided state, viz. Saul, David, and Solomon. The ten tribes revolting from Rehoboam, made choice of Jeroboam for their king, consequently Rehoboam and his successors henceforth governed only the two tribes of Judah and Benjamin. From that time the kings of Judah are to be distinguished from those of Israel, to which the reader of the Old Testament should pay attention, if he would well understand the narrative. Of the kings of Judah the most remarkable in history were, Rehoboam, through whose weakness and folly the kingdom was divided; Jehoiachin, who was conquered by Nebuchadnezzar, and carried into Babylonish captivity; and Zedekiah, under whom Jerusalem was taken and destroyed, and the rest of the Jews carried into captivity. Jerusalem was the capital and residence of the kings of Judah; and Samaria the royal city of the monarchs of Israel.

The most celebrated among the kings of Israel were Jeroboam, the founder of the new kingdom; Ahab, known for his impiety and persecution of the prophets; and Hosea, in whose reign the royal city of Samaria was besieged and taken by the Assyrians, and the ten tribes carried away into captivity.

Under the first kings divine worship was confined to the ark and the tabernacle. But in the reign of Solomon, the temple, which was called after his name, was built, and became the place of religious worship. This has been called

the prophetic æra, as more than thirty prophets flourished during this period.

The Hebrews were much attached to, and skilful in the practice of agriculture, but are generally supposed to have neglected the liberal arts; architecture and navigation must, however, have been well understood by them, of which their foreign merchandize and the magnificence of Solomon's temple are sufficient proofs.

The *fifth* period of sacred history includes a space of time amounting to three hundred and seventy-two years, commencing from the end of the Babylonish captivity to the times of the Maccabees.

The Babylonish captivity lasted seventy years, at the end of which, Cyrus, king of Persia, permitted them to return to their own country, where they were governed, first, by Zerubbabel, by whom they had been conducted home, and who laid the foundation of the second temple; and afterwards by Nehemiah, who inclosed Jerusalem with walls, and wrote a history of his own times. After the death of Nehemiah the supreme power devolved upon the high priests. To Esdras, a priest, we are indebted for the collection, revision, and transcript of the books of the Old Testament. In this period the Jews were subject to the Persians, and afterwards were under the dominion of the Greeks. Under the Persian monarchs they were treated with the greatest clemency, but endured the most rigorous oppressions while they were under the power of the Greeks, particularly in the reign of Ptolemy Lagus, who carried a hundred thousand Jews into slavery.

The Massorets, a set of grammarians held sacred among the Jews, arose in this period, by whose care and labours the sacred text has been preserved in the state in which we find it. The books of Kings, Chronicles, Esdras, Nehemiah, and Esther, were written in this æra, also the *septuagint* translation of the Hebrew scriptures, which, as the title denotes, is ascribed to the labours of seventy learned Jews.

The *sixth* period of scripture history begins with the family of the Maccabees, and continues till the reign of Herod the Great, containing one hundred and twenty-four years.

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In this period the contending sects of the Pharisees and Sadducees rose up; the Pharisees, in general, took the lead in number, and also on account of their supposed piety and austerity of manners, which recommended them to the people; they were the strenuous assertors of Jewish traditions. The Sadducees were inferior in numbers, but supported by the favour of the great, gave much trouble to the Pharisees. In fact, the Sadducees seem to have been quite Latitudinarians in principle, which probably rendered them very acceptable to the heathens. Besides these there was a great variety of other sects, which it is not necessary to notice in this place.

The institution of the Sanhedrim, or grand senate, is referred to this period, which consisted of persons venerable for age, and remarkable for wisdom and knowledge, by whose authority the power of the reigning prince was, in a great measure, restrained within certain prescribed limits. This period is likewise celebrated for the encouragement given to literature by the Maccabean princes.

The *seventh* and last period of this history begins with Herod, who is usually denominated the Great, and reaches down to the destruction of Jerusalem, the seventieth year of the Christian æra, containing one hundred and six years.

Herod is celebrated in history for his infamous cruelties. He however restored the temple, or adorned it in so magnificent a manner, as to render it one of the most stupendous works of the age. After his death the government was divided between Herod Antipas, and his brothers Archelaus and Philip. Each division was called a tetrarchy, or fourth part, and the brothers reigned under the title of tetrarchs. The wife of Herod Antipas was the famous Herodias, by whose persuasion John the Baptist was beheaded. The third Herod was a prudent and excellent governor; he is the Agrippa to whom St. Paul addressed his celebrated oration. He was succeeded by Herod the Fourth, who annexed Judea once more to Syria. And in the next reign, under Herod Agrippa, Jerusalem was besieged, taken, and, together with the temple, was utterly destroyed.

During this period frequent mention is made of the Pharisees, Sadducees, and Herodians; and as these different

sects are continually referred to in the New Testament, it may be proper to give a brief account of them here. The Pharisees were so called from their mode of separating themselves from the rest of the people. The Sadducees derive their name from Sadock, the chief of their sect. The Herodians are supposed to have been the flatterers of Herod, to have embraced his religion, and to have accommodated themselves to the fashion of the times in which they lived. They were also distinguished from the Pharisees and other Jews, by their falling in with Herod's scheme of subjecting himself and his dominions to the Romans, and introducing among his own nation the manners and customs of heathen countries. In their zeal for the Roman authority they complied with a variety of idolatrous practices introduced by Herod, who, we are informed by Josephus, built a temple to Cæsar, erected a magnificent theatre at Jerusalem, instituted pagan games, and placed the Roman eagle over the gate of the temple.

PRACTICAL INSTRUCTIONS

On Taste, Literature, and the Art of Composition.

CONTINUED IN A SERIES OF LETTERS FROM A FATHER TO
HIS SON.

LETTER XIII.

My dear George,

I SHALL now proceed, according to my promise, to illustrate the rules formerly given, by a critical examination of the first paper of Mr. Addison, upon the Pleasures of the Imagination.

By any remarks I am now to make on the paper, I would not have you to imagine that I mean to put myself upon a level with Mr. Addison, or to depreciate his beauties. I have frequently pointed him out as one of the most elegant writers in the English language; but it is possible to find faults in the best authors, as there are none without them. The design of giving you a critical examination of this paper,

paper, is to enable you to judge for yourself on any similar occasion.

Sentence first. "Our sight is the most perfect and most delightful of all our senses."

This sentence is clear, precise, and simple, and therefore agreeably to Horace's rule, a very proper introductory one. Some authors would have added *the* before the word *most*, the last time it occurs in the sentence, but with less propriety, as the repetition of the article serves to mark a difference and distinction between the things contrasted. Thus if I was to say, "the sight is at once the most delightful and the most useful of our senses," it would be proper; but there is no contrast implied in the sentence as it stands.

Sentence second. "It fills the mind with the largest variety of ideas, converses with its objects at the greatest distance, and continues the longest in action, without being tired or satiated with its proper enjoyments."

The latter part of this sentence is perspicuous, and as musical perhaps as our language will admit. The most significant words, *fills*, *converses*, *continues*, are very properly placed at the different branches of the period, and grow in their importance. The words *tired* and *satiated*, though they appear synonymous, have different significations. We are tired or fatigued with action, and satiated with enjoyment. The last word is also very proper for a conclusion, it consists of a proper mixture of long and short syllables; and I formerly remarked, that either the termination or the penult ought to be long. I must also remark another beauty in this part of this period: there is a gentle degree of personification runs through it, which does not raise the mind much above the ordinary tone, but yet serves to convey the sentiment in a more lively manner.

Sentence third. "The sense of feeling can indeed give us a notion of extension, shape, and all other ideas that enter at the eye, except colours; but, at the same time, it is very much straitened and confined in its operations to the number, bulk, and distance of its particular objects."

In this sentence we have the variety, action, and continuation of the faculty. I must, however, observe, that ex-

tension and *shape* are not ideas, but qualities of matter: though we say, "confined in its operations as to the number," yet we do not use the word *fractured* in the same sense. It might be expressed better in this way: "It is very much fractured in its operations, and confined as to the number," &c. The epithet *particular* is also improper in this place; the word *peculiar* would have been more applicable. *Particular* stands opposed to *general*; *peculiar* to what is possessed in common with others: or, in the language of logicians, *particular* denotes the species, *peculiar* what is called *differentia*; but, on the whole, I think the word *particular* redundant in this place, and would have been better omitted.

Sentence fourth. "Our sight seems designed to supply all these defects, and may be considered as a more delicate and diffusive kind of touch, that spreads itself over an infinite multitude of bodies, comprehends the largest figures, and brings into our reach some of the most remote parts of the universe."

This sentence is well constructed and musical; but as its parts have the same cadence with the second period, it might be considered as a monotony, had it not been for the intervening sentence.

I must observe, however, that *to bring into our reach*, is neither so common nor so correct, as *to bring within our reach*.

Sentence fifth. "It is this sense which furnishes the imagination with its ideas: so that, by the pleasures of the imagination or fancy, (which I shall use promiscuously) I here mean such as arise from visible objects, either when we have them actually in our view, or when we call up their ideas in paintings, statues, descriptions, or any the like occasion."

Though the particle *it* is generally a bad word to begin a sentence, yet it is very properly used in this place, being more precise and pointed than if the author had said, "This sense," &c. The words in the parenthesis are too feeble, and might have been better expressed thus, "terms which I shall use promiscuously." The word *occasion* in the

the conclusion is improperly used; for we do not call a painting or statue an *occasion*: if he had said by such *means*, would have been better.

Sentence sixth. "We cannot, indeed, have a single image in the fancy, that did not make its first entrance through the sight; but we have the power of retaining, altering, and compounding these images which we have once received into all the varieties of picture and vision, that are most agreeable to the imagination: for by this faculty a man in a dungeon is capable of entertaining himself with scenes and landscapes more beautiful than any that can be found in the whole compass of nature."

The author has used the word *retaining* in a very improper manner; he speaks of "retaining, altering, and compounding those images we have received into all the variety," &c. That is, "retaining them into all the varieties," which is evidently improper. We might change it thus with advantage. "The power of retaining those images, and of altering and compounding them into all the variety," &c. Or perhaps still better, "We have the power of retaining, altering, and compounding those images that we have received, and of forming them into all the varieties," &c.

Sentence seventh. "There are few words in the English language which are employed in a more loose and uncircumscribed sense than those of the fancy and the imagination."

I have formerly observed on the impropriety of beginning a sentence with a particle, which fault our author has fallen into in this sentence: it would have been better to have said, "Few words in the English language," &c. He might also have omitted *the* before *fancy* and *imagination*, as it is not the powers of the mind that are meant, but the words.

Sentence eighth. "I thought it therefore necessary to explain and determine the notion of these two words, as I intend to make use of them in the thread of my following speculations, that the reader may conceive rightly what is the subject I proceed upon."

The first thing I shall take notice of here, is, that the words

words *fix* and *determine* are by no means synonymous. In the former period Mr. Addison has said, that the words of which he was speaking were "loose and uncircumscribed." The word *fix* therefore belongs to the former of these; for we *fix* what is *loose*, or confine the word to its proper sense and application. On the other hand, we *determine*, or limit what is uncircumscribed; and the word *determined* shows how far the signification extends. An author more sparing of his words than Mr. Addison, would have used the expression *ascertain*, which would have answered the meaning of both the others; instead of the word *notion*, he would have used the "*meaning of these two words*," as we never say, the "*notion of a word*." The phrase *thread* is also unnecessary, as there is no occasion for a metaphor in this place, especially as it is dropped in the next clause of the sentence. The conclusion of this sentence is also unharmonious; he might have made it better thus: "The subject upon which I am to proceed," or "of which I am to treat."

Sentence ninth. "I must therefore desire him to remember, that by the pleasures of the imagination, I mean only such pleasures as arise from sight, and that I divide these pleasures into two kinds: my design being first of all to discourse of those primary pleasures of the imagination which entirely proceed from such objects as are before our eyes; and in the next place to speak of those secondary pleasures of the imagination which flow from the ideas of visible objects, when the objects are not actually before the eye, but are called up into our memories, or formed into agreeable visions of things that are either absent or fictitious."

The beginning of the above sentence appears careless; it is too like the others, and indeed begins in the same manner, "I must therefore." The author might have avoided this fault, if he had begun thus: "On this account," or "for this reason." The word *pleasure* is too often repeated in the first clause of the sentence, and seems too formal in the division, as he was only to speak of these two kinds of pleasure. The word *only* is also improperly placed; for as it stands at present, it is connected with the word *mean*.

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and it ought to be with *pleasures*: "I mean such pleasures only," &c. The last part of the sentence is well connected, clear, and musical.

Sentence tenth. "The pleasures of the imagination, taken in their full extent, are not so gross as those of sense, nor so refined as those of the understanding."

This sentence is elegant and correct, and affords me an opportunity to remark the difference between *these*, *those*, and *that*. The Scotch are particularly fond of the word *these*, and scarcely ever make use of the word *those*: they would probably have said, "are not so gross as *these* of sense:" but the impropriety of using the word *these* will appear very strong, if we use the singular instead of the plural.

Sentence eleventh. "The last are indeed more preferable, because they are founded on some new knowledge or improvement in the mind of man; yet, it must be confessed, that those of the imagination are as great and as transporting as the other."

In this sentence there is an evident inaccuracy; "more preferable" is a gross solecism. Had a Scotch writer used such an expression, we should have seen it pointed out as a Scoticism in the next review, and marked in Italic characters. This sentence has also a further inaccuracy: in the former period he mentions *three* kinds of pleasure, those of the *imagination*, *sense*, and *understanding*; but it cannot, by any rules of syntax, be inferred from the word *other*, whether it relates to the sense or the understanding: in order, therefore, to render it more precise, he ought to have said, "and as transporting as those of the understanding."

Sentence twelfth and thirteenth. "A beautiful prospect delights the soul as much as a demonstration; and a description in Homer has charmed more readers than a chapter in Aristotle. Besides the pleasures of the imagination have this advantage above those of the understanding that they are more obvious and easy to be acquired."

These two sentences are very beautiful, and afford a good illustration of the preceding.

Sentence fourteenth and fifteenth. "It is but opening the eye and the scene enters. The colours paint themselves on

on the fancy with very little attention of thought or application in the beholder."

Here we may perceive the advantage of short sentences; they give life and spirit to a composition on many occasions. But there is an inaccuracy to say "the *scene* enters:" an actor may *enter*, but the scene opens or appears.

Sentence eighteenth and nineteenth. "A man of a polite imagination is let into a great many pleasures that the vulgar are not capable of receiving. He can converse with a picture, and find an agreeable companion in a statue. He meets with a secret refreshment in a description, and often feels a greater satisfaction in the prospect of fields and meadows than another does in the possession."

These sentences are perspicuous, clear, and musical. Perhaps the word polite is not so properly applied to the imagination as to a person; at least it is not customary.

Sentence twentieth. "It gives him, indeed, a kind of property in every thing he sees, and makes the most rude uncultivated part of nature administer to his pleasures. So that he looks upon the world, as it were, in another light, and discovers in it a multitude of charms that conceal themselves from the generality of mankind."

In this sentence the word *it* is improper, because there is no proper antecedent nearer than the beginning of the preceding paragraph, viz. "a polite imagination. The words "another light" are ambiguous; they may signify another light than he once saw them in, or in another light than they are seen by other men. And the author certainly meant the latter. The words "as it were" are but an ungraceful apology for ambiguity. The last clause of the period is but a feeble conclusion, or rather a repetition of what was said before, and would have been better omitted; neither do we perceive that smoothness in the period which characterizes this author's style.

Sentence twenty-first. "There are, indeed, but very few who know how to be idle and innocent, or have a relish of any pleasures that are not criminal: every diversion they take is at the expence of some one virtue or other; and their very first step out of business is into vice or folly."

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Here again Mr. Addison's style breaks forth in its full beauty, and the period is finely finished, clear, and harmonious: perhaps indeed there is not a more finished sentence in the English language: how different from that affectation which distinguishes the pompous nothings of the modern imitators of the Johnsonian style? In delivering this sentence one of them would have said, "There are indeed very few who know how to join the relaxation of idleness with the salubrity of innocence, or have a relish for any pleasures which are not tainted with the pollution of guilt; every diversion they take is at the expence of some virtue impaired, or evil habit acquired. And their very first step out of the regions of business is into the perturbations of vice or the vacuity of folly."

Sentence the twenty-second. "A man should endeavour, therefore, to make the sphere of his innocent pleasures as wide as possible, that he may retire into them with safety, and find in them such a satisfaction as a wise man would not blush to take."

The author uses here the metaphor of a sphere, and drops it in the very next clause: perhaps there was no occasion for it at all; but as he did introduce it, he should have continued it to the end of the sentence, and said "thither" instead of "into them."

Sentence the twenty-third. "Of this nature are those of the imagination, which do not require such a bent of thought as is necessary to our more serious employments, nor, at the same time, suffer the mind to sink into that negligence and remissness, which are apt to accompany our more sensual delights; but, like a gentle exercise to the faculties, awaken them from sloth and idleness, without putting them upon any labour or difficulty."

The words "of this nature," in the beginning of this sentence, do not connect well with the latter part of the former sentence: he might have used some such words as these, "this advantage we gain," &c.

Sentence the twenty-fourth and twenty-fifth. "We might here add, that the pleasures of fancy are more conducive to health than those of the understanding, which are worked

out by dint of thinking, and attended with too violent labour of the brain. Delightful scenes, whether in nature, painting, or poetry, have a kindly influence on the body as well as the mind; and not only serve to clear and brighten the imagination, but are able to disperse grief and melancholy, and to set the animal spirits in pleasing and agreeable motions."

These two sentences are well concluded; but the expression, "by dint of thinking," in the first appears vulgar and colloquial: in the second it would have been better to have said, "as they not only serve to clear," &c. for by these means he might have avoided the conjunction.

Sentence the twenty-sixth. "For this reason Sir Francis Bacon, in his essay upon health, has not thought it improper to prescribe to his reader a poem or a prospect, where he particularly dissuades him from knotty and subtle disquisitions, and advises him to pursue studies that fill the mind with splendid and illustrious objects; as histories, fables, and the contemplation of nature."

In this sentence we have an evident instance of bad arrangement: the wrong placed member is this, "where he particularly," &c. It should have been, "Sir Francis Bacon, in his essay on health, where he particularly dissuades the reader from knotty and subtle disquisitions, has not thought it," &c.

Sentence the twenty-seventh and twenty-eighth. "I have in this paper, by way of introduction, settled the notion of those pleasures of the imagination which are the subject of my present undertaking; and have endeavoured, by several considerations, to recommend to my reader the pursuit of those pleasures. I shall, in my next paper, examine the several sources from which these pleasures are derived."

In these sentences the author has shewn much judgment and art in placing the feeblest part of them, such as, "by way of introduction, by several considerations, in my next paper," where they will be least observed. The beauty of the arrangement of these sentences will easily appear, by putting the same words into a different order, thus: "I have in this paper settled the notion of those pleasures of
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the imagination which are the subject of my present undertaking, by way of introduction, and endeavoured to recommend to my readers the pursuit of these pleasures by several considerations. I shall examine the source from whence it flows in my next paper." Any person who has a tolerable ear, will at once perceive how much the words are altered to their disadvantage.

THE LITTLE HERMITAGE.

(Continued from vol. II. page 389.)

"**W**HAT kind of machine is this?" said the children: "sometimes it is heavy and sometimes it is light!" "Do you not see," said Joseph, "that this pole performs the office of a lever?" "A lever; what is that?" "It is a bar of wood or iron, which is supposed to be inflexible, and without weight, and which is used to lift or move heavy bodies. Three things are principally to be distinguished in the lever. First, the fulcrum, which is the prop or point on which the lever rests. Secondly, the resistance, which is the burden required to be moved. Thirdly, the power, which is the man, or any other force causing the lever to act to move the burden. Here, the fulcrum of our lever is this stock on which the pole is placed. The resistance is the bucket, which it is required to raise. The power is yourselves. Now the force of the lever is so much greater, as the fulcrum is more distant from the power, and nearer to the resistance. On the contrary, if the fulcrum is removed from the resistance to approach the power, it only augments the force of the obstacle, and diminishes that of the man. This is the reason of the variations which you have experienced in the weight of this bucket; and you could not raise it. Now I have drawn it back in such a manner that the longest end is on your side, and you will now scarcely find any resistance." "In this case," said the children, "we must try to fix the pole on the fulcrum, in its present position, and it will be a mere play for us to draw water." "That is what I am going to do," said Joseph,

“ by passing a peg through the pole into the two branches of the fork, nearly in the same manner as you see the beam of a scale beam or balance fixed on its rest. But I can still farther simplify your labour in the employment of this machine; for in the manner in which it is now disposed, it always requires the concurrence of two persons, one to move the end of the lever, the other to direct the bucket in the well. But we have only to suspend from the end that you hold a stone of a weight nearly equal to the force that you exert, and then only one of you will be wanted in drawing water. Standing on the edge of the well, he will have nothing to do but to draw down and direct the bucket, for it will almost raise itself.”

Delighted with an invention so simple and convenient, our children were never weary of working this new see-saw, and admiring its effect. All their grief was, that they had not a watering-pot to make use of the water which they now obtained so easily. Among the different pieces of furniture with which they had begun to set out their house, was a little barrel, which served to hold their provision of wine. Joseph having observed it, told them, that if they would devote it to that use, he would make it into a watering-pot. “ O!” replied the children, “ but we would have it a watering-pot which shall throw out the water in small rain, like those that the gardeners use.” “ Well, this that I shall make you will produce the same effect.” “ What, can you fit to it a pipe terminated by a kind of funnel pierced with holes, like the real watering-pots that are sold?” “ No, it will merely be a watering-pot with holes in the bottom, which may be carried, full of water, wherever you want to make use of it.”

The children having shown the strongest desire to see so singular an utensil, Joseph took the barrel, and, by the help of a gimblet, he pierced one end with a multitude of holes, diverging a little towards the sides. At the other end, near the centre, he made one hole nearly the size of the end of the little finger; then, to the same end of the barrel, he fastened a cord of bark, in form of a handle, that it might be carried in the hand like a basket. This done, Joseph told Louis to dip it by the same end into the water, till it should

should be quite filled. Louis plunged it in accordingly; but when he drew it out, all the water which had gone in escaped through the little holes at the bottom. "You see, now," said the children to Joseph, "that your machine is good for nothing, and that you have spoiled our barrel to no purpose." "Stop," replied Joseph, "you shall see that with me the water will not come out at all, or at least not till I choose it."

He took the barrel accordingly, plunged it anew into the water till it was exactly full, then drew it out, and carried it in his hand several times round the garden, without a single drop escaping through the pierced bottom; then at length, at his command, the water flowed out at the same end, in a thousand fine diverging lines, as from a common watering-pot.

The children immediately asking the cause of such a phenomenon, Joseph told them that it was owing to the weight of the air. "How the weight of the air! what does that mean?" "The air," my little friends, "is that light fluid which envelopes all the surface of the earth, in which we are plunged like fish in the water; which we feel indeed, but cannot see. It is that invisible breath which you hear murmuring among the leaves of those trees: which you feel lightly gliding over your face, and refreshing you when you are warm; which shakes about your clothes, often pushes you with violence, and which you then call the wind. Well, this breath, this air, this wind, is a real substance, almost like water, much more liquid, much clearer, much finer and lighter, but which has, nevertheless, a certain weight, and consequently presses upon all the objects that it surrounds. In the same manner as bodies plunged in the middle of a river, are pressed on all sides by the weight of the water which encompasses them, so upon the earth, all the bodies which we see, and we ourselves, are perpetually weighed upon on all sides by the gravity of the air, in the midst of which we move. In fact, the air is so heavy a substance, that you will learn, when you are bigger, that a man of middling stature habitually supports, from the air surrounding him, a weight of more than twenty thousand pounds. You will also be taught, when you study, that the

weight of the air alone is able to raise and keep in equilibrio a column of water thirty-two feet in height. Well, it is by means of the pressure of the air that the water with which I fill this vessel is retained in it at my pleasure, though the bottom is bored full of holes. Look how I manage this. I plunge in the barrel with the bored end downwards; and, whilst I plunge it, I leave the hole open which is in the upper end. As the water penetrates the barrel from below, it drives out the air that was contained in it, which escapes by the upper opening. When the water has at length entirely filled the barrel, I draw it out of the basin; but, at the same time, I am careful to stop the upper hole very accurately with my thumb, and then what happens? The air that environs the whole vessel no longer presses upon the water contained in it, except on the side where it would otherwise escape, drives it back the contrary way, and opposes its passage. Then when I want the water to run out, I merely uncover the upper hole; the air immediately penetrates by this opening, and its pressure being equal on both sides, above and below, the water falls down by its own weight. I can also suspend its flowing at will. I have nothing to do but alternately to shut and open the upper hole. This is the whole secret of the watering-pot. Shall I repeat to you the same effect in another manner? See here is a hollow stalk of elder which will show it you. I plunge it into the water till it is entirely filled; I then take it out, stopping its upper orifice with my thumb; and you see that the water stays in perfectly well though it is open below. If I take off my thumb, you see the water falls instantly. Here, bring the glass that you have in your cabin, I will show you the same effect under still another form. See, I fill it entirely with water; on the surface of this water I place a large leaf, or a piece of paper, which I apply to the edges of the glass: now, placing the palm of my left hand on this paper, I suddenly overturn the glass in such a manner that its mouth shall be downwards, and keeping it well balanced with my right hand I draw away my left. You see the water remains suspended in the glass, and not a drop runs out; and it will remain in this situation as long as no air is admitted into the glass."

(To be continued.)

FIRST PRIZE,

On the Subject for No. 14, of the MONTHLY PRECEPTOR,

TOUR FROM LONDON TO EDINBURGH.

By Master HENRY KIRKE WHITE,

Of Nottingham, aged 15.

Dear N.,

IT is with pleasure that I now attempt to give you a brief recital of those principal objects in my late journey, which to me were the sources of much gratification and instruction; and if I by that means afford you even the smallest degree of pleasure and amusement, my purpose will be fully accomplished.

The morning on which I and my companion departed from the metropolis was remarkably fine, and the pleasure which we felt on emerging from its busy regions would have been exquisite in the extreme, had it not in some measure been allayed by the recollection of the dear friends from whom we were just separated. The purity of the air, and the novelty of the surrounding objects, however, so speedily exhilarated our spirits, that our regret was considerably abated when at Highgate we bade a final adieu to the capital, which is there distinctly seen. A brisk trot soon brought us to Barnet, a small town, partly in Herts and partly in Middlesex. We found here nothing remarkable, excepting a stone column, erected in commemoration of the decisive battle which was fought near this place between the Houses of York and Lancaster, in 1471, in which the brave Earl of Warwick was slain. Proceeding over a pleasant country we arrived at St. Albans, a town of great antiquity, on the river Coln, which also was the scene of two sanguinary conflicts between the White and Red Roses. This place arose out of the ruins of the ancient Verulan, where the Romans had a station, some vestiges of which are still to be seen. It received its present appellation from the celebrated protomartyr of Britain, Albanus, whose remains were miraculously discovered by Offa, king of Mercia, in 793. This prince founded a monastery of Benedictines

tines in this place, of which the gateway is the only part which has withstood the ravages of time. The church, which formerly appertained to the abbey, is one of the most venerable piles in England; and though it has, in a great measure, been rebuilt in a more modern stile, yet many remains of the antient Saxon architecture are still preserved. The monuments which it contains are numerous: those of Humphrey, Duke of Gloucester, and the Abbot Wethamsted, particularly attracted my attention. Of the other churches (there are three), that of St. Michael is rendered illustrious, by containing the monument of the great Francis Bacon, Lord Verulam. At the bottom of the town (which is situated on the slope of a hill) we were shewn a house, which was once the residence of the diabolical Sarah, Dutchess of Marlborough. Her portrait is still preserved here, and is most exquisitely beautiful; and I can only observe, that if this be a true resemblance, the vices of a fiend were concealed under the form of an angel.

From St. Albans our next stage was Dunstable, built on each side of the Roman Watling-street, and intersected by the Jekniel. It is undoubtedly a very antient place. On a hill to the west we were shewn traces of a Roman camp, and a few remains of a priory for black canons, to which the church, which is a singular structure, originally appertained. An elegant manufacture in straw is carried on here, and the industrious and healthy appearance of the poor, who were engaged in it, deserves notice.

From Dunstable we had a pleasant ride to Woburn, in Bedfordshire; a market town, once famous for its abbey. In the church (from which the steeple is disjointed) we particularly admired the pulpit, which is a fine piece of Gothic carving. After visiting the beautiful seat of the Duke of Bedford, near this place, which contains some good paintings, we left Woburn, and passing by the celebrated pits of fullers' earth, (a species of marl) to which the British cloth is supposed to owe its superiority, we rode over a hilly sandy country, through Newport Pagnell, which has a manufactory of bone lace, to Northampton, a large town, of a most beautiful appearance, on the river Nen. Its principal manufactory was formerly that of shoes, but the
knotted

knotted department of frame-work knitting, has lately been removed to this place from Nottingham. The market-place is handsome and spacious, and the public buildings, in general, deserve the attention of the traveller. Of the four churches, that of All Saints particularly charmed us, from the chasteness of the style of architecture in which it is erected, though the others are tolerably handsome edifices. Of the antient castle we saw but few remains, but it is reported to have been a place of considerable strength. At a small distance from this place we were shewn a fine Gothic structure, called Queen's Cross, erected by Edward I., in memory of his beloved Eleanor. A considerable number of these magnificent mementos of affection were formerly to be met with, some of which still remain; but we were informed that this was by far in the best preservation. In the meadows, below the town, a battle was fought, between Henry VI. and the Yorkists, in which that weak and unfortunate monarch was defeated and taken prisoner.

From Northampton we rode through a pleasant country, beautifully interspersed with elegant houses and villas, to Market Harborough, a small and rather dull town, on the Welland, which containing nothing remarkable we proceeded to Leicester, a very antient borough, with a manufactory of coarse hosiery goods. The churches contain nothing remarkable, nor do the public buildings deserve notice. After visiting, therefore, the burial-place of the inhuman Richard III., which is beneath a bridge over the Soar, and the remains of the abbey where Cardinal Wolsey expired, overwhelmed with misery and disgrace, we made an excursion to Bosworth Field, which Shakespear has rendered classic ground; and from thence pursued our route to Loughborough, a small town, pleasantly situated in fertile meadows, watered by the Soar, but containing nothing worthy of remark, we proceeded, over a beautifully variegated country, to Bunny, the seat of Sir Thomas Parkyns, Bart. The hall is a ruinous old building, one wing of which is inhabited only by the bat and the owl, and indeed forcibly brought to my recollection that beautiful verse in Gray's elegy:

“Save

" Save that from yonder ivy mantled tow'r,
 The weeping owl does to the moon complain
 Of such as, wand'ring near her secret bow'r,
 Molest her antient solitary reign."

Bunny is famous for its annual wrestling for a prize given by the lord of the manor. The combatants meet in an inclosed place, and he who by dint of striking with his feet (which are armed with shoes faced with nails) on his antagonist's legs, or by other means, can first extend him on the ground is declared victor. The consequences of these barbarous games are the most shocking and bloody wounds and bruises, which one would imagine are a pleasing sight to the by-standers; for every effective blow is welcomed with the most savage and boisterous exultation. Full of indignation at the police which could countenance such wanton brutality, we proceeded across the Trent to Nottingham, a large and flourishing town, and the principal seat of the stocking and lace manufactories. It is charmingly situated on a rock, on the Sein, near its junction with the Trent; and the air is extremely pure and salubrious. The houses are, in general, well built; those in the market-place (which is elegant and spacious) are supported by lofty stone columns, and have a very handsome appearance. Hospitals for poor are very numerous, and there is one for the sick, built exactly on the spot where Charles I. erected his standard at the commencement of those civil wars, which ended in his own destruction. There are three churches here; that of St. Mary is an antient and extensive pile, though besides an excellent organ it contains nothing remarkable; and the public edifices seldom exceed the usual style of such buildings. The castle is built on a bold romantic rock, commanding a beautiful prospect of the adjacent country. It has a fine park adjoining, watered by the Sein. Nottingham is a place of great antiquity. Ingenious antiquaries have conjectured, that it received the original of its present appellation from the Saxons, but they all concur in the belief of its being a place of considerable importance before the time of the settlement of that race in Britain. In the park near the town are some curious excavations in the rock, called the Druid holes, though the pillars are, from
 what

what can be discerned, entirely in the Gothic stile of architecture. Perhaps they were the places of worship of the inhabitants soon after the introduction of christianity, when the people had not entirely banished that reverence for similar places which they imbibed from the Druids. Leaving Nottingham we proceeded over Sherwood Forest to Mansfield, a small town, trading in malt, corn, and hosiery goods, and from thence rode over a hilly country to Chesterfield, a tolerably handsome town, with an inconsiderable manufactory of worsted stockings. The iron founderies near this place are large, and the ore and fuel are found in the neighbourhood. The church is a handsome structure, and contains some good monuments; its steeple is singularly formed, for in whatever quarter you view it, it seems to lean towards you. Proceeding through Dronfield, a genteel little town, we had a charming ride to Sheffield, a populous place, famous for its hardware manufactories, which are supplied with ore from Hull, by the river Don. There are also lead works here and a silk mill. Gladly did we leave this disagreeable town, and proceeding through Barnsley, where there are linen and wire manufactories, stopped at Sandall to view the ruins of the castle, near which the Duke of York, father to Edward IV., lost his life. Leaving Sandall, we soon arrived at Wakefield, a flourishing and pleasing town, with considerable manufactories of white cloths and tanneries. It is situated on the banks of the Calder, over which, on a handsome stone-bridge, is an elegant chapel, erected by Edward IV., in memory of his father. Pursuing the direct route our next stage was Leeds, one of the most populous places in England, and the principal of the clothing towns in Yorkshire. It is particularly the mart for the coloured and white broad cloths, of which vast quantities are sold in the cloth halls, one of which, as it happened to be market-day, we visited. It is a building of great extent, and the cloth was exposed for sale on benches; and, notwithstanding the multiplicity of buyers, sellers, and spectators, all was conducted without the least confusion. From hence we made an excursion to view Kirkstall Abbey, a most grand and noble ruin, which seems to have been a stately fabric but it never can have appeared

appeared so beautiful, nor so awfully majestic in its newest state as now, when its mouldering turrets are covered with ivy.

“Time’s gradual touch
Has moulder’d into beauty many a tow’r,
Which, when it frown’d with all its battlements,
Was only terrible ; and many a fane
Monastic, which, when deck’d with all its spires,
Serv’d but to feed some pamper’d abbot’s pride,
And awe the unletter’d vulgar.”

Mason.

Leaving Leeds we proceeded through Ripley to Rippon, a large but not populous corporate town. The church, which is large and magnificent, is adorned with three lofty spires, but it otherwise contains nothing remarkable. Deviating from the direct road, we visited Studly Park, the seat of Mr. Aislabie, where we were enchanted with all that nature in conjunction with art could perform. The grounds are laid out with the most exquisite taste, and the prospects are, in general, grand : in these Fontaine’s abbey is frequently a provincial feature, and surely there cannot be a more venerable and romantic ruin. It is built in the most beautiful Gothic stile, and the tower and walls still remain, the roof only being gone. The scenery around it is noble and appropriate. On one side a beautiful river glides, tufted with evergreens ; on the other rocks and woods rise in all the pleasing wildness of Salvator ; and, in front, a smooth lawn, extending to the ruin, forms a pleasing contrast with its frowning turrets, and the whole is a coup d’œil, which cannot be exceeded. Highly delighted with these charming scenes, we pursued our journey to Richmond, a small town on the Swale, with a castle on an eminence, north of that river, built by a nephew of the Conqueror. From hence we proceeded to Pierce Bridge, and from thence to Durham, (a bishop’s see) charmingly situated on a hill, the foot of which is watered by the Were. The environs of this place are very pleasant : in our rambles through them we saw Neville’s Cross, erected in commemoration of the victory obtained by Queen Philippa, in 1346, over David Bruce, King of Scotland, who was taken prisoner. The cathedral is a large edifice, and has lately been
much

much improved by the ingenious Mr. Wyatt. The Chapter-house is built in the form of a theatre, and the cloisters are spacious and beautiful. The castle, which contains little that can attract the attention of the traveller, is the residence of the bishop. From Darham we visited Finchale Abbey, once the scene of the ridiculous austerities by St. Godric; and from thence passing through Chester-le-street, an antient Roman station, reached Newcastle, which we entered by a handsome bridge over the Tyne. It is a large and populous town, rising from the bottom to the top of a hill with a sudden acclivity. The principal trade is in coal, vast mines of which are in the neighbourhood. It is carried in boats to the ships, which cannot ascend higher than the Shields'. The castle, which to all appearance has been a place of considerable strength, was built by Robert Curthose, a son of the Conqueror. Our next day's ride lay over a champaign country to Morpeth, a small town, once dignified with a castle, of which there are few remains. From hence we proceeded through Willingham to Coldstream, a small town on the Tweed, on which there is a handsome bridge. It was once famous for its monastery, few vestiges of which are now to be seen. It was here that General Monk raised the two battalions, which are now called the Coldstream regiment of Guards. Our next stage was Berwick, a town between England and Scotland, properly belonging to neither; it is fortified, and once was a place of great importance. Its castle, the guilty scene of many a blood-fraught action, is now in ruins. It has a handsome bridge, consisting of fifteen arches, over the Tweed, and drives a considerable trade in corn and salmon. The country from this place becomes highly fertile and pleasant, being interspersed with numerous and handsome country seats and villas: in short, every thing indicated our near approach to Edinburgh, which, passing through Middleton, we soon reached; thus finishing our long, yet, I hope not, uninteresting journey. A particular description of this interesting city I must defer giving you until a more convenient opportunity, assuring you that I still remain, your's, &c.

HENRY KIRKE WHITE.

PRIZE TRANSLATION,

On the Object and Utility of Poetry.

By Master JAMES LAWSON,

Of Nottingham, aged 14.

BUT we shall consider poetry in a more trivial and humble light than its dignity demands, unless we direct our minds to the source from whence its grandeur shines most conspicuous; unless we consider it as serving in the rites and mysteries of religion. To these objects it was first applied, and so happily applied, that on no other subject do we find it capable of creating such sublime ideas as when religion is the theme; in every thing but religion poetry assumes a character not her own; in all other things she requires the assistance of art; but here she relies upon her own strength, or is rather supported by a spirit truly divine. For what can the human mind conceive more noble, more sublime, more energetic; what more delicate and beautiful than what occurs in the sacred writings of the Hebrew prophets? which almost equal the inexpressible grandeur of the things by the weight of words and the sublimity of verse; some of which are more antient than the fables of the Greek poets; and are in as great a degree superior to them in the majesty of the poetry, as they surpass the most antient in point of antiquity. But if we investigate the origin of poetry we shall find it only in religion. For since poetry proceeds from nature (having never until lately been reduced to laws and rules) it is not peculiar to any age or nation, but to mankind in general; it is necessarily applied to the more ardent affections of the mind: the nature of which is such, that they invariably express themselves in the most elevated and exalted language; they likewise diversify, by their impetuosity, the uniform order of continued diction; they turn the sentences sharp and quick, as by frequent pulsations; and divide the language variously, according to the motion and habit of the mind. This is most frequent in admiration and joy; and what could strike so vehemently

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the mind of man, when newly created, and not yet depraved by the vanity of opinion, as what was then evident to him, viz. the goodness, the wisdom, and the power of the Almighty? What is more probable, than that the first effort of unpolished verse should break forth with rapture in the praises of the Creator? Without doubt, poetry was brought to perfection in the same solemnities in which she originated; she was first engaged in the temple and at the altar; and though different religions have prevailed in various countries and ages, yet in this they all agree, that they were originally celebrated in hymns and songs. It is evident that this is the origin of poetry, and the more so, because she always embraces with the most ardent affection sacred and celestial subjects as her parent and tutor; here she loves to return as to her native country; here she dwells with pleasure, and appears most beautiful.

GENERAL ADJUDICATION OF THE PRIZES

GIVEN WITH THE FOURTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

Subject.—“*Tour from London to Edinburgh.*”

The first prize has been awarded to Master H. KIRKE WHITE, of Nottingham, aged 15. Attested by his sister, Mrs. Smith.

To receive a pair of twelve-inch Globes, value three guineas.

The second to Master GEORGE ROBERT COOPER WILCOCKE, of Messrs. Palmer's school, Hackney, aged 13 years and ten months. Attested by Mr. Paris, classical tutor.

To receive a Silver Medal, value Half-a-guinea.

The third to Miss CHARLOTTE ANN WALDIE, of Newcastle, aged 12. Attested by her father.

To receive Dr. Mavor's Natural History.

The fourth to Master J. RABAN, of Mr. Haddon's academy, Olney, Bucks, aged 15. Attested by Mr. Haddon.

To receive Dr. Gregory's Elements of a Polite Education.

The fifth to Master JOHN FINCH, of Mr. Wicks' academy, Englefield-green, aged 15. Attested by Mr. Wicks.

To receive Dr. Mavor's Lives of Plutarch abridged.

The sixth to Miss JANE LEWIS, of North Baddesley, aged 15. Attested by Mrs. Elderton, governess.

To receive Irvine's Elements of Prosaic Composition.

The seventh to Master W. BEDDOME, of Messrs. Palmer's school, Hackney, aged 13. Attested by Mr. Palmer.

To receive Dr. Gregory's Polite Education.

The eighth to Miss MARY PARKEN, of Dunstable, aged 14. Attested by her father.

To receive Irvine's Elements of Prosaic Composition.

The ninth to Miss ELIZ. EWART, of Sharnbrook, aged 13. Attested by the Rev. Mr. Whitehouse.

To receive Dr. Mavor's Natural History.

The tenth to Miss ELIZ. NEWSON, of Norwich, aged 13. Attested by her father.

To receive Irvine's Elements of Prosaic Composition.

We were in hopes that the liberal encouragement of the public would have enabled us to extend our rewards to a greater number of candidates, and we never had more to regret our limited means than on the present occasion. Out of an immense number of excellent papers presented to us the selection was very difficult; and instead of ten we ought to have given at least thirty prizes. Those of Master LAWSON, of Mr. Blanchard's academy, Nottingham; of Miss HEN. EYRE, of Reading; of Master MAJOR AINGER, of Whittlesea; of Miss FRANCES HAMPSON, of Luton; of Master JAMES SMITH, and Master JOHN GREGORY, of Hackney; of Miss JULIANA CURTIS, of Wisbech; of Miss C. M. KEARNEY, MARY ORTH, and LOUISA ELIZ. TAYLOR, are scarcely, if any, inferior to those which have obtained prizes. Miss MARIA JANE WALDIE would have obtained one, had she not by our rules been excluded, having so lately received a second prize.

The following candidates are also entitled to considerable praise:

Master John Adams, aged 14, of Olney

Master John Atkinson, not 15, of Mr. Newby's academy, Barningham, Yorkshire

Master J. Button, aged 14, of the seminary Thorp-Arch, Yorkshire

Master William John Bright, of the academy at Writtle, Essex

Miss Anna Barnes, not 12, of the City-road

Master R. H. Barnes, not 11, of the grammar-school, Barnard Castle, Yorkshire

Miss Maria Barr, aged 13, of Worcester

Master

- Master *J. R. Beddome*, not 14, of Messrs. Palmer's school, Hackney
 Master *Thomas Bell*, aged 13, of the grammar-school, Barnard-Castle, Yorkshire
 Master *E. Buswell*, aged 14, of Harboro'
 Master *W. Buck*, aged 12, of the academy East Dereham, Norfolk
 Master *J. Crosse*, not 15, of the seminary Thorp-Arch, Yorkshire
 Miss *Elizabeth Ann Chase*, aged 15, of Luton
 Master *C. Cowley*, aged 13, of Oiney
 Master *J. Conder*, aged 11, of Messrs. Palmer's school, Hackney
 Master *Charles Copland*, not 12, of the academy, East Dereham, Norfolk
 Master *J. Clarke*, not 14, of the grammar-school, Barnard-Castle, Yorkshire
 Master *John Clarke*, not 15, of High Wycombe
 Master *Wm. Robert Clayton*, aged 14, of Harleyford
 Master *Edmund Crocker*, not 16, of Frome school, Somersetshire
 Master *G. F. Dickson*, not 14, of Messrs. Palmer's school, Hackney
 Master *R. Earnshaw*, not 14, of Mr. Falconer's academy, Doncaster
 Master *George Edwards*, not 15, of the grammar-school, Barnard-Castle, Yorkshire
 Master *W. J. Fox*, not 16, of Norwich
 Master *Nathaniel Fenn*, aged 13, of Messrs. Palmer's school, Hackney
 Master *Joseph Fallowfield*, aged 14, of the grammar-school, Barnard-Castle
 Miss *Joanna Gillam*, aged 14, of Worcester
 Master *Thomas Gibson*, not 14, of the grammar-school, Barnard-Castle, Yorkshire
 Miss *Mary Ann Hayes*, aged 12
 Master *W. Hodgson*, not 14, of Messrs. Palmer's school, Hackney
 Master *J. Hobson*, aged 15, of the grammar-school, Barnard-Castle, Yorkshire
 Master *J. Hislop*, aged 13, of Market Harboro'
 Master *John Hird*, aged 14, of the grammar-school, Barnard-Castle, Yorkshire
 Master *Charles Haydon*, not 13, of Mess. Palmer's school, Hackney
 Master *John Inkersole*, not 14, of ditto
 Miss *Mary Jecks*, aged 15, of Wisbeach
 Master *B. Henry Jones*, not 14, of Mess. Palmer's school, Hackney
 Master *Henry Jones*, of Mr. Newby's academy, Barningham, Yorkshire
 Miss *Ann Elizabeth Langford*, not 15, of East-row, Moorfields
 Master *Thomas Lewis*, not 16, of King-street, Westminster
 Miss *Martha Macmichael*, aged 14, of Miss Robins's, Worcester
 Miss *S. Macmichael*, aged 13, of ditto
 Master *Richard Nanton*, aged 15, of Messrs. Palmer's, Hackney
 Miss *Isabella Ormston*, aged 14, of Newcastle-upon-Tyne
 Miss *Frances Osborn*, aged 15, of Miss Robins's, Worcester
 Master *Ebenezer Olding*, not 13, of Messrs. Palmer's, Hackney
 Master *John Price*, aged 13, of ditto

- Master *John Pell*, aged 11, of Olney
 Master *Samuel Raban*, aged 16, of ditto
 Master *H. N. Rickman*, aged 14, of Lewes
 Master *T. Ridley*, aged 14, of Mr. Newby's academy, Barningham,
 Yorkshire
 Master *C. Studd*, aged 13, of Palgrave school
 Master *T. Smith*, aged 15, of Wisbeach
 Miss *Eliz. Selby*, not 13, of the seminary Westgate-street, New-
 castle-upon-Tyne
 Master *Samuel Seaman*, not 12, of Great Yarmouth, Norfolk
 Master *Jedidiah Strutt*, aged 15, of the seminary Thorp-Arch
 Master *Richard Steele*, aged 13, of the grammar-school, Barnard-
 Castle, Yorkshire
 Miss *Sophia Tongue*, not 14, of Croom's-hill boarding-school,
 Greenwich
 Master *John Bayly Tailor*, aged 14, of Palgrave school
 Master *Henry Taylor*, aged 13, of ditto
 Master *C. W. Thompson*, aged 12, of the seminary Thorp-Arch,
 Yorkshire
 Master *Isaac Taylor*, not 14, of Colchester
 Master *William Thorpe*, aged 12, of Whittlesea
 Master *C. M. Vickery*, not 13, of Mr. Buck's academy, East Dere-
 ham, Norfolk
 Master *W. Wood*, aged 14, of the grammar-school, Barnard-Castle,
 Yorkshire
 Master *George Watson*, aged 13, of ditto
 Master *Robert Andrew Waugh*, aged 13, of Palgrave school
 Master *J. West*, aged 14, of Harboro'
 Master *J. Wilson*, not 14, of Messrs. Palmer's academy, Hackney
 Master *B. Wykes*, aged 13, of Olney
 Miss *Rebecca Yorke*, not 16, of Wisbeach
 Master *William Young*, not 12, of the grammar-school, Barnard-
 Castle, Yorkshire

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND SUBJECT.

TRANSLATION FROM THE LATIN.

"ON THE OBJECT AND UTILITY OF POETRY."

The first prize has been adjudged to Master **JAMES LAW-
SON**, of the Rev. Mr. Blanchard's academy, Nottingham, aged
14. Attested by the Rev. Mr. Hallifax, classical assistant.

To receive a Cabinet Library, value two guineas.

The second to Miss **SUSANNAH TAYLOR**, of Norwich,
aged 13. Attested by her father, John Taylor, Esq.

To receive Mrs. Barbauld's Poems.

The

The third to Master JOHN CLARKE, educated at Messrs. Palmer's, Hackney, aged 14. Attested by his father.

To receive Irvine's Elements of Prosaic Composition.

The fourth to Master GEORGE LAWSON, of Nottingham, aged 12 years and a half. Attested by Mr. Hallifax, classical assistant at Mr. Blanchard's.

To receive Dr. Mavor's British Nepos.

The fifth to Master J. W. MACKIE, son of Dr. Mackie, of Southampton, aged 14. Attested by his father.

To receive Dr. Gregory's Elements of a Polite Education.

The sixth to Master W. F. DRAKE, of Norwich, aged 14 years and 10 months. Attested by Dr. Smith.

To receive Dr. Mavor's Plutarch.

The seventh to Master GEORGE EDWARDS, of Barnard-Castle School, aged 14. Attested by Mr. Barnes.

To receive Irvine's Elements of Prosaic Composition.

The eighth to Master WILLIAM ALMOND, educated at Mr. Blanchard's, Nottingham, aged 14. Attested by his father.

To receive Allen's History of England.

The following are deserving of COMMENDATION:

Master Henry Biden, not 13, of Mr. Newby's academy, Barningham, near Greta Bridge, Yorkshire

Master Robert Briggs, not 14, of the Hull academy, Yorkshire

Master James Bayne, not 14, of King's College

Master William Collinson, aged 13, of Hull academy, Yorkshire

Master Francis Chalmer, jun. not 15, of Kent-street, Liverpool

Master William Clarke, not 13, of the seminary Thorp-Arch, Yorkshire

Master George Draycott, not 15, of the grammar-school, Wisbeach.

Master George Archer Ellis, not 13, a pupil of Mr. C. Nichols, teacher of the mathematics, &c. Great Yarmouth, Norfolk

Master Joseph Fallowfield, aged 14 years and a half, of the grammar-school, Barnard-Castle, Yorkshire

Master H. Green, aged 14, of the seminary Thorp-Arch, Yorkshire

Master Joseph Hopkins, aged 14, of the grammar-school, Kidderminster

Master William Tyler Heath, not 14, of the Rev. J. Blanchard's academy, Nottingham

Master Henry Lucas, aged 13, of the Gosport academy

Master James Lamb, aged 13, of the seminary Thorp-Arch, Yorkshire

Master Robert Lee, aged 13, of ditto

Master Peter John Martin, not 15, of Reigate

Master

Master *John Quartus Richardson*, aged 12, of Messrs. Hayward and Bolton's academy Altercliffe, near Sheffield, Yorkshire

Master *William Richardson*, aged 14, of the seminary Thorp Arch, Yorkshire

Master *John Gooch Robberds*, not 12, of St. Saviour's, Norwich

Master *Richard Steele*, aged 13, of the grammar-school, Barnard-Castle, Yorkshire

Master *John Smith*, not 14, of Gainborough

Master *William Stow*, not 14, of Attercliffe, near Sheffield, Yorkshire

Master *Joseph Turner*, not 14, of Great Yarmouth, Norfolk

Master *Christopher Munnings Vickery*, not 13, of Mr. Buck's academy, East Dereham, Norfolk

Master *W. Wright*, not 13

Master *John Wright*, not 13, of King-street, Norwich

Master *J. B. Watson*, aged 13

Master *Nathaniel Walker*, aged 13, of Magdalen School, Oxford

Master *George Watson*, aged 13, of the grammar-school, Barnard-Castle, Yorkshire

Master *William Wood*, aged 14, of ditto

NEW PRIZE SUBJECTS FOR No. XVI.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of May.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

GRAND CONTEST OF SUCCESSFUL CANDIDATES.

The first class of prizes in the sixteenth number will be only open to such candidates as have received first or second prizes in any of the three classes since the first institution of the Preceptor, or whose essays, though not first or second, have been printed; and the subject will be,

What are the respective merits of the Antients and Moderns in Science and Literature? In what Arts and Sciences, and in what branches of Literature did the Antients particularly excel; and in what are the Moderns superior to them?

The best essay to entitle the writer to Books, value three guineas; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS

CLASS II.

TRANSLATION FROM THE LATIN.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT
COMPLETED THEIR FOURTEENTH YEAR.

Translation of part of CICERO's CONSOLATIO.

Sic enim plane cognosci, ac sensu ipso dijudicari potest: summam esse pæneque incredibilem in animis celeritatem, ac festinationem, cujus ope, quæ corpus non modo certo mensium, sed vix etiam annorum spacio perficere, atque exsequi possit, ea ipsi non modo semel puncto temporis percurrere, sed etiam sæpius excogitare, & repetere facillime queant, quod si mirum videatur, cur non admirabilius censeatur, meminisse animum tam multa, innumerabilib. ante sæculis gesta: quæ futura sunt, cogitando prospicere, ac non modo præsentia, sed etiam præterita, & futura, veluti deum, omnia complecti, ac sub oculos subjicere conari? quis dubitet, cum hæc intelligat, eademque in se ipso agnoscat, divinum esse animum, nec, si divina æterna sunt, ipsum esse mortalem? cum præsertim, duabus ex rebus, quæ præcipuè in animo sunt, illius æterna natura facile intelligi, ac deprehendi possit. hæc autem sunt, motus, qui in eo præcipuus est, principium, ac perpetuitas; cum enim ex seipso moveatur, nec aliunde, ut cætera, principium motus mutuetur: summa autem in eo, quamdiu in corpore est, perpetuitas motus appareat, quippe, quæ etiam in dormientibus agnoscat, & vigeat: idcirco dubitari nullo modo potest, quin divinus sit, & sempiternus: futurus & sane ita esse ratio vincit, & rerum probat exitus. Dei enim imago quædam animus est, ex ipso Deo delibata, ac profecta. quod si deus immortalitate fruitur, cur eam partem, quam ex seipso sumit, mortalem esse velit? quin hoc ipso singularem, & eximiam divinam esse vim indicandum putavit, quod non solum ipse immortalis sit, sed etiam, quos velit, suæ naturæ compotes, & plane immortales efficiat. Corpus autem voluit esse mortale, nec immerito: cum e terra, cujus mutationi subiecta natura est, initium duxerit, & in eam ipsam, vitæ cursu confecto, abire debeat. Sed animus, profectus a Deo, cælum ipsum appetit: nam in eum locum, unde de discessit, semper optat redire: tertia autem, si cui appetenda, corpori soli est: at vero animis æterna cæli sedes quærenda, eaque propria illorum patria: si quidem animorum nulla in terris origo inveniri potest.

The best translation to be entitled to a Cabinet Library, value two guineas; the seven next best to books, value five shillings each.

CLASS III.

ARITHMETICAL QUESTION.

The prizes for the Maps, as proposed in No. 11, being to be disposed of in our next number, the adjudication for the *Arithmetical Question*, proposed in our last (No. 13) will necessarily be deferred till the 5th of May, till which time answers may continue to be sent in; and the answers to the *Mathematical Questions* (before announced) may be deferred till the 5th of June, when a final decision shall be made of them.

NEW PRIZE SUBJECT FOR No. XVII.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SEVENTEENTH YEAR.

A critical examination of No. 465 of the *Spectator*, in the manner of the Letter from a Father to his Son, contained in this number.

Having endeavoured in my last Saturday's paper to shew the great excellency of faith, I shall here consider what are the proper means for strengthening and confirming it in the mind of man. Those who delight in reading books of controversy, which are written on both sides of the question in points of faith, do very seldom arrive at a fixed and settled habit of it. They are one day entirely convinced of its important truths, and the next meet with something that shakes and disturbs them. The doubt which was laid revives again, and shews itself in new difficulties, and that generally for this reason, because the mind which is perpetually tost in controversies and disputes, is apt to forget the reasons which once set it at rest, and to be disquieted with any former perplexity, when it appears in a new shape, or is started by a different hand. As nothing is more laudable than an inquiry after truth, so nothing is more irrational than to pass away our whole lives without determining one way or other in those points which are of the last importance to us. There are indeed many things from which we may withhold our assent; but in cases by which we are to regulate our lives, it is the greatest absurdity to be wavering and unsettled, without closing with that side which appears the most safe and the most probable. The first rule therefore which I shall lay down is this, that when by reading or discourse we find ourselves thoroughly convinced of the truth of any article, and of the reasonableness of our belief in it, we should

should never after suffer ourselves to call it into question. We may perhaps forget the arguments which occasioned our conviction, but we ought to remember the strength they had with us, and therefore still to retain the conviction which they once produced. This is no more than what we do in every common art or science, nor is it possible to act otherwise, considering the weakness and limitation of our intellectual faculties. It was thus that Latimer, one of the glorious army of martyrs who introduced the Reformation in England, behaved himself in that great conference which was managed between the most learned among the Protestants and Papists in the reign of Queen Mary. This venerable old man knowing how his abilities were impaired by age, and that it was impossible for him to recollect all those reasons which had directed him in the choice of his religion, left his companions who were in the full possession of their parts and learning, to baffle and confound their antagonists by the force of reason. As for himself, he only repeated to his adversaries the articles in which he firmly believed, and in the profession of which he was determined to die. It is in this manner that the mathematician proceeds upon propositions which he has once demonstrated; and though the demonstration may have slipped out of his memory, he builds upon the truth, because he knows it was demonstrated. This rule is absolutely necessary for weaker minds, and in some measure for men of the greatest abilities; but to these last I would propose, in the second place, that they should lay up in their memories, and always keep by them in a readiness, those arguments which appear to them of the greatest strength, and which cannot be got over by all the doubts and cavils of infidelity.

But, in the third place, there is nothing which strengthens faith more than morality. Faith and morality naturally produce each other. A man is quickly convinced of the truth of religion, who finds it is not against his interest that it should be true. The pleasure he receives at present, and the happiness which he promises himself from it hereafter, will both dispose him very powerfully to give credit to it, according to the ordinary observation, that *we are easy to believe what we wish*. It is very certain, that a man of sound reason cannot forbear closing with religion upon an impartial examination of it; but at the same time it is as certain, that faith is kept alive in us, and gathers strength from practice more than from speculation.

There is still another method which is more persuasive than the former, and that is an habitual adoration of the Supreme Being, as well in constant acts of mental worship, as in outward forms. The devout man does not only believe but feels there is a Deity. He

has actual sensations of him ; his experience concurs with his reason ; he sees him more and more in all his intercourses with him, and even in this life almost loses his faith in conviction.

The last method which I shall mention for the giving life to a man's faith, is frequent retirement from the world, accompanied with religious meditation. When a man thinks of any thing in the darkness of the night, whatever deep impressions it may make in his mind, they are apt to vanish as soon as the day-breaks about him. The light and noise of the day, which are perpetually soliciting his senses, and calling off his attention, wear out of his mind the thoughts that imprinted themselves in it, with so much strength, during the silence and darkness of the night. A man finds the same difference as to himself in a crowd and in a solitude : the mind is stunned and dazzled amidst that variety of objects which press upon her in a great city : she cannot apply herself to the consideration of those things which are of the utmost concern to her. The cares or pleasures of the world strike in with every thought, and a multitude of vicious examples give a kind of justification to our folly. In our retirements every thing disposes us to be serious. In courts and cities we are entertained with the works of men, in the country with those of God. One is the province of art, the other of nature. Faith and devotion naturally grow in the mind of every reasonable man, who sees the impressions of divine power and wisdom in every object on which he casts his eye.

The papers to be received by the publisher, post paid, and fully authenticated, on or before the 5th of June.

**** In compliance with the earnest request of many of our distant correspondents, we shall henceforth endeavour to announce our prize subjects two months before.*

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LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XV.

OF VISION AND OPTICAL GLASSES.

IT has already been explained to you, that objects are rendered visible not by single rays, but by small bundles of rays diverging from every point of the object, like an inverted cone, or like a painter's brush or pencil, and therefore called pencils of light. It has also been intimated, that these pencils of light are, by the refractive powers of the eye, again made to converge upon the back part of the eye, in points corresponding to those from which they proceeded, so as to form there a complete image of the object. In the twelfth lecture, fig. 2, it was further shewn, that pencils of light are sent forth in all directions from every part of a visible object, so that an eye, when placed in any situation that light can travel to it from the object in a straight line (whether above or below, or at either side) shall be able to perceive it.

In describing the nature of refraction, enough has been said to shew you, that it is the property of every convex glass to cause the rays of light to converge. In this respect the eye is to be considered as a convex lens, constructed with such admirable skill by the great Author of Nature, that the rays converge to a point exactly in the proper place; so that if the humours were otherwise disposed, even to the breadth of a horse-hair, the effect would be totally destroyed.

But you will understand the subject better by considering the structure of this curious organ ; in describing which I shall adopt the simple but expressive language of Mr. Ferguson.

The eye is nearly of a globular form. It consists of three coats and three humours (see fig. 1.). The part DHHG of the outer coat, is called the *sclerotica*, the rest DEFG the *cornea*. Next within this coat is called the *choroides*, which serves for a lining to the other, and joins with the *iris mn, mn*. The *iris*, which is that coloured circle which gives the character as to colour to the eye, is composed of two sets of muscular fibres ; the one of a circular form, which contracts the hole in the middle, called the *pupil*, when the light would otherwise be too strong for the eye ; and the other of radical fibres, tending every where from the circumference of the iris toward the middle of the pupil ; which fibres, by their contraction, dilate and enlarge the pupil when the light is weak, in order to let in more of its rays. The third coat is only a fine expansion of the optic nerve L, which spreads like net-work all over the inside of the choroides, and is therefore called the *retina* ; upon which are painted the images of all visible objects, by the rays of light which either flow or are reflected from them.

Under the *cornea* is a fine transparent fluid, like water, which is therefore called the *aqueous humour*. It gives a protuberant figure to the cornea, fills the two cavities *mn* and *mn*, which communicate by the pupil P, and has the same refractive power as water. At the back of this lies the *chrySTALLINE humour* R, which is shaped like a double convex glass ; and is a little more convex on the back than the fore-part. It converges the rays, which pass through it from every visible object to its focus at the bottom of the eye. This humour is transparent like chrystal, and is much of the consistence of hard jelly. It is inclosed in a fine transparent membrane, from which issue radical fibres, called the *ligamentum ciliare* all around its edge ; and join to the circumference of the iris. These fibres have a power of contracting and dilating occasionally, by which means they alter the shape or convexity of the chrySTALLINE humour, and also shift it a little backwards or forwards in the eye, so as to adapt its focal distance at the bottom of the eye to the different

different distances of objects; without which provision, we could only see those objects distinctly, that were all at one distance from the eye.

At the back of the chrystalline lies the *vitreous humour* KK, which is transparent like glass, and is largest of all in quantity, filling the whole orb of the eye, and giving it a globular shape. It is much of the same consistence as the white of an egg, and very little exceeds water in its refractive power.

As every point of an object ABC sends out pencils of rays in all directions, some rays, from every point on the side next the eye, will fall upon the cornea between E and F; and by passing on through the humours and pupil of the eye, they will be converged to as many points on the retina or bottom of the eye, and will there form a distinct inverted picture *cba* of the object. Thus, the pencil of rays *qrs*, that flows from the point A of the object, will be converged to the point *a* on the retina; those from the point B will be converged to the point *b*; those from the point C will be converged to the point *c*; and so on of all the intermediate points: by which means the whole image *abc* is formed, and the object made visible.

That vision is effected in this manner, may be demonstrated experimentally. Take a bullock's eye while it is fresh, and having cut off the three coats from the back part, quite to the vitreous humour, put a piece of white paper over that part, and hold the eye towards any bright object, and you will see an inverted picture of the object upon the paper.

It has been a matter of inquiry among scientific persons, why the object appears in an upright position, while the image on the retina is inverted. In truth, we know nothing of the connexion which exists between the thinking faculty and the organs of sensation. It may, however, suffice to answer the present question, if we say that the mind certainly does not look upon the image which is painted on the optic nerve. That nerve is sensible of the impression from the rays of light being reflected upon it, as the organs of touch feel the impression of any external object by coming in contact with it. Nor is there any reason why the mind

should not perceive as accurately the position of bodies, if the rays reflected from the upper parts of those bodies are made to touch the lower parts of the eye, as if they had been directed to the upper parts. Suffice it, that such a correspondence is established between the parts of the eye to which the rays are converged, and the different parts of the object, that we do not find that persons blind from infancy, who have been restored to sight by the operation of couching, have been led into the smallest mistake.

To very perfect sight the three humours of the eye appear necessary. Yet by a very bold experiment (for such it undoubtedly was at first), it is found that we can see tolerably well, even though one of them should be taken away, particularly if we assist the sight by glasses. It very often happens that the chrySTALLINE humour loses its transparency, and thus prevents the admission of the visual rays to the back parts of the eye. This disorder is called by the surgeons a *cataract*. As we know that the chrySTALLINE humour stands edgewise behind the pupil, all then that we have to do, is to make it lie flat in the bottom of the eye, and it will no longer bar up the rays that come in at the pupil. A surgeon, therefore, takes a fine straight awl, and thrusting it through the coats of the eye, he depresses the chrySTALLINE into the bottom of the eye, and there leaves it. Or sometimes he cuts the coats of the eye, the chrySTALLINE and the aqueous humour burst out together; in some hours the wound closes, a new aqueous humour returns, and the eye continues to see, by means of a glass, without its chrySTALLINE humour. This operation is called couching for the cataract. Cheselden once couched a boy who had been blind from his birth with a cataract. Being thus introduced, in a manner, to a new world, every object presented something to please, astonish, or terrify him. The most regular figures gave him the greatest pleasure, the darkest colours displeased, and even affrighted him. The first time he was restored, he thought he actually touched whatever he saw; but by degrees his experience corrected his numberless mistakes.

The eye may be remedied when the chrySTALLINE humour only is faulty; but when there happens to be a defect in the optic nerve, then the disorder is almost ever incurable. It is

called

called the *gutta serena*, a disorder in which the eye is, to all appearance, as capable of seeing as in the sound state; but, notwithstanding, the person remains for life in utter darkness. The nerve is insensible, and scarcely any medicine can restore its lost sensations.

In the course of the preceding lectures it was necessary to mention the angle of vision. But you will now be able better to understand why an object seen under a large angle, as near objects are, appears larger than the same object would at a distance. Thus the men and women, when you meet them in the street, appear of their natural size, but if you look down upon them from the top of St. Paul's, they appear as small as puppets; and thus if you look from one end towards the other of a long and straight row of trees, you will see them gradually diminish, as they are further removed from your eye, though, on a near inspection, you would find them all of an equal size. The reason of this can be no longer a secret. You are already informed, that rays (or rather pencils of rays) are sent forth from every visible object, in all directions, some more and some less convergent. When you are near, therefore, you see the extreme points of any object by pencils of rays, which converge or meet in an angle more obtuse than when it is at a greater distance; and as the rays cross each other in the eye, a larger image is of course painted on the retina. Thus, in fig. 2, the object ABC is seen by the eye at D, under the angle APC. and the image upon the retina *cba* is very large; but to the eye at E, placed at double the distance, the same object is seen under the angle *ApC*, which is only equal to half the angle APC. The image *cba*, therefore, is only half as large in the eye at E as in the eye at D; and this will sufficiently explain why objects *appear smaller in proportion to their distance from the eye*. Observe, however, that this proposition will admit of some exceptions, where the judgment corrects the sense. Thus, if a man six feet high (and not far distant from the spectator, is seen under the same angle with a dwarf two feet high (say at the distance of three feet from the spectator) still the dwarf will not appear as tall as the man, because the sense is corrected by the judgment. These exceptions will, however, in general,

only take place with respect to near objects, and those with whose forms we are well acquainted.

From what has been said of the structure of the eye, you will also perceive the causes of distinct and indistinct vision. To see an object distinctly, it is necessary that every pencil of diverging rays, which reaches the eye from the object, should be converged to a point on the optic nerve, corresponding to that from which the rays have diverged. If, on the contrary, they are brought in an unconverged state to the retina, you may easily conceive that the particles of light will be so scattered and dispersed, as to make an indistinct impression. This last defect takes place when the eye, by age or infirmity, is made flat, and consequently is not sufficiently convex to cause the rays to converge in their proper place; persons with this defect can often see objects better at a great distance than very near. The opposite fault to this is when the eye is too convex, when the rays will be made to unite too soon, before they reach the retina; persons with this defect, therefore, are called *short-sighted*, because they can only discern objects which are very near to the eye.

I have seen a very pretty contrivance in the shop of an optician, illustrative of the causes of weak and short sight. Two eyes were made of glass, as fig. 3 and 4; and the pencils of diverging rays, issuing from three points, were represented by threads of silk of three different colours. Thus, in fig. 3, which represents weak or indistinct vision, you see the rays are not united in points when they reach the back of the eye, where the retina is situated, but if they were suffered to pass on without interruption, would converge in some part behind it. On the contrary, in figure 4, you see that, from the great convexity of the cornea, the rays are made to converge too soon, and, in effect, the perfect and distinct image is formed in the midst of the vitreous humour, and before it reaches the retina.

From what you have already heard of the nature of lenses, you will be able to comprehend that the remedy for the former of these defects, that is, where the eye is too flat to cause the rays to converge in the proper place, is a double convex lens, the property of which is to increase the convergency

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vergency of rays. The focus of this glass, however, must be exactly adapted to the wants of the eye for which it is intended. As therefore the eye grows flatter from age and infirmities, this will explain what is meant by "spectacles for all ages," where the defect of sight is not great, as in younger persons, spectacles not very convex will suffice; but where the eye is very flat, as in old persons, glasses of a stronger magnifying power will be required.

On the contrary, *near sighted eyes* (such as fig. 4) being too convex, it is necessary to prevent the rays from converging too soon, which can only be done by means of a concave glass, which renders convergent rays less convergent. This glass, however, must also be exactly adapted to the necessity of the eye, otherwise the rays will not converge at the proper point.

I cannot quit this subject without noticing the gross stupidity of the atheist. Can any persons in their senses conceive that so nice, so exquisite an organ as the eye should be formed by *chance*! That by *chance* the humours should be disposed with the most perfect mathematical precision, so that a mistake to the breadth of a hair would be sufficient to defeat the purpose of vision! Yet these are the men, my young friends, who without understanding any principle of any one science, have the impudence to call themselves philosophers! * Though in what their philosophy can consist, would require more than Newton possessed to be able to discover.

There is reason to believe, that the use of convex glasses, both as burning glasses and magnifiers, was not unknown to the antients; and, in the twelfth century, Alhazen, an Arabic philosopher, treated at some length of the magnifying

* Why they have chosen to adopt this name no man can possibly devise. They might as well have called themselves architects, heralds, antiquarians, or by any other denomination with which they have no connexion whatever. Ask any of these pretended philosophers why a convex lens causes the rays of light to converge, or any similar question, and you will soon see whether they have any pretension to the name of philosophers.

power of these glasses. He was followed by our truly illustrious countryman, Roger Bacon, who demonstrated by experiment that a small segment of a glass globe would assist the sight of old persons. Thus he may be regarded as the person who first discovered the theory of spectacles, though they were not brought into use until the following century.

The telescope was invented about the end of the sixteenth century, and the discovery is commonly supposed to have been casual. The account which is generally received is, that Zacharias Jansen, a spectacle-maker of Magdeburgh, trying the effect of a convex and concave glass united, found that when placed at a certain distance from each other, they had the property of making distant objects appear nearer to the eye; but the reason of this effect was not discovered till the time of Kepler.

The microscope was also an invention of the Jansens, and as it is rather a simpler instrument than the telescope, it will serve to introduce you very properly to a knowledge of these kind of glasses. You already know that the nearer any body is to the eye, the larger is the angle under which it will be seen; but if placed too near, the image will be confused: in fact, an eye which is not too near sighted cannot discern any object clearly at a shorter distance than six inches; and many objects are too small to be seen at that distance, because they cannot be brought under any sensible angle. This deficiency is supplied by the microscope.

The single microscope is only a small convex glass *cd*, (fig. 5) having the object *ab* placed in its focus, and the eye at the same distance on the other side; so that the rays of each pencil, flowing from every point of the object on the side next the glass, may go on parallel in the space between the eye and the glass; and then, by entering the eye at *C*, they will be converged to as many different points on the retina, and form a large inverted picture *AB* upon it, as in the figure.

To find how much this glass magnifies, divide the least distance (which is about six inches) at which an object can be seen distinctly with the bare eye, by the focal distance of
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the glass; and the quotient will shew how much the glass magnifies the diameter of the object.

The double or compound microscope, consists of an object-glass *cd*, (fig. 6) and an eye-glass *ef*. The small object *ab* is placed at a little greater distance from the glass *cd* than its principal focus, so that the pencils of rays flowing from the different points of the object, and passing through the glass, may be made to converge and unite in as many points between *g* and *b*, where the image of the object will be formed: which image is viewed by the eye through the eye-glass *ef*. For the eye-glass being so placed, that the image *gb* may be in its focus, and the eye much about the same distance on the other side, the rays of each pencil will be parallel, after going out of the eye-glass, as at *e* and *f*, till they come to the eye at *k*, where they will begin to converge by the refractive power of the humours; and after having crossed each other in the pupil, and passed through the chrySTALLINE and vitreous humours, they will be collected into points on the retina, and there form the large inverted image *AB*.

The magnifying power of this microscope is as follows. Suppose the image *gb* to be six times the distance of the object *ab* from the object-glass *cd*; then will the image be six times the length of the object: but since the image could not be seen distinctly by the bare eye at a less distance than six inches, if it is viewed by an eye glass *ef*, of one inch focus, it will be brought six times nearer the eye; and consequently viewed under an angle six times as large as before; so that it will be again magnified six times: that is, six times by the object-glass, and six times by the eye-glass, which multiplied into one another, makes thirty-six times; and so much is the object magnified in diameter more than what it appears to the bare eye; and consequently thirty-six times thirty-six, or one thousand two hundred and ninety-six times in surface.

The solar microscope is constructed upon similar principles. Two convex glasses are inclosed at their proper distances in a brass tube. This tube being fixed in the window-shutter of a dark room, the object is put between the two glasses, when a very large inverted image of it will be exhibited

exhibited on the opposite wall, provided the sun shines sufficiently bright and clear upon the microscope. This instrument bears a strong analogy, therefore, to the camera obscura already described.

What microscopes perform upon minute bodies very near, telescopes perform upon great bodies very remote; namely, they enlarge the angle in the eye under which the bodies are seen; and thus, by making them very large, they make them appear very near; the only difference is, that in the microscope the focus of the glasses is adapted to the inspection of bodies very near; in the telescope, to such as are very remote. Suppose a distant object at *AB* (see fig. 7), its rays come nearly parallel, and fall upon the convex glass *cd*; through this they will converge in points, and form the object *E* at their focus. But it is usually so contrived, that this focus is also the focus of the other convex glass of the tube. The rays of each pencil, therefore, will now diverge before they strike this glass, and will go through it parallel; but the pencils all together will cross in its focus on the other side, as at *e*, and the pupil of the eye being in this focus, the image will be viewed through the glass, under the angle *geb*, so that the object will seem at *E* under the angle *DeC*. This telescope inverts the image, and therefore is only proper for viewing such bodies, as it is immaterial in what position they appear, as the sun, the fixed stars, &c. By adding two convex glasses, the image may be seen upright. The magnifying power of this telescope is found by dividing the focal distance of the object-glass, by the focal distance of the eye-glass, and the quotient expresses the magnifying power.

An inconvenience was found to attend the use of this instrument, as when any extraordinary magnifying power was wanted, the field of view, and even the image, was found to be tinged with different colours. The reason of this will be plain, when I come to treat of the prism and the prismatic colours. You will then see, that if a lens is very convex, the edge acts like a prism, and separates the component particles of light, which are differently coloured, and consequently a round circle of different coloured rays is produced. To remedy this, Mr. Dolland, finding that flint

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and crown glass had different refracting powers, and that crown glass (the common window glass) dispersed the rays of light less than any other, adapted two convex glasses of crown glass to a double concave of flint glass (which has the greatest disperseive power) so as exactly to fit, and by that means made them counteract each other, so that the field of view is presented perfectly colourless. These telescopes, therefore, are called *achromatic* (or colourless) telescopes.

The reflecting telescope performs, by reflecting the rays issuing from any object, what the last did by refracting them. Let *ab*, fig. 8, be a distant object to be viewed: parallel rays issuing from it, as *ac* and *bd*, will be reflected by the metallic concave mirror *cd* to *st*, and there brought to a focus, with the image a little further and inverted; agreeably to the effect of a concave mirror on light, as formerly described. The hole in the mirror *cd* does not distort or hurt the image *st*, it only loses a little light; nor do the rays stop at the image *st*; they go on, and cross, a little before they reach the small concave mirror *en*: from this mirror the rays are reflected nearly parallel through the hole *O*, in the large mirror to *R*; there they are met by the plano-convex lens *bi*, which brings them to a convergence at *S*, and paints the image in the small tube of the telescope close to the eye. Having by this lens, and the two mirrors, brought the image of the object so near, it only remains to magnify this image by the eye-glass *kr*; by which it will appear as large as *zy*.

To produce this effect, it is necessary that the large mirror be ground so as to have its focus a little short of the small mirror, as at *q*; and that the small mirror should be of such concavity as to send the rays a little converging through the hole *o*; that the lens *bi* should be of such convexity as to bring those converging rays to an image at *S*; and that the eye-glass *kr* should be of such a focal length, and so placed in the tube, that its focus may just enter the eye through the small hole in the end of the tube.

To adapt the instrument to near or remote objects, or rather to rays that issue from objects converging, diverging, or parallel, a screw at the end of a long wire, turns on the outside of the tube, to bring the small mirror nearer to, or farther from, the large mirror; and so as to adjust their focuses

cuses according to the nearness or remoteness of the objects. The sun-glass at the end of the small tube should be unscrewed, when any other object, except the sun, is looked at.

To estimate the magnifying power of the reflecting telescope, multiply the focal distance of the large mirror by the distance of the small mirror from the image *S*; then multiply the focal distance of the small mirror by the focal distance of the eye-glass *kr*; then divide these two products by one another, and the quotient is the magnifying power.

NATURAL HISTORY.

INSECTS.

ORDER II.—HEMIPTERA.

THIS order includes the different kinds of locusts and grasshoppers, and, in general, all those animals whose antennæ are setaceous, and heads inflexed.* They are termed hemiptera, because only half of their wings appear when in a state of rest: they do not then meet together in a longitudinal suture, like those of the last order, but have some part of their interior margins crossed, or laid one over the other, above the abdomen.

GENUS I.—THE BLATTA.

Or cockroach, is that well known species of animals which frequent kitchens and bakehouses.* Their appearance is ugly and deformed; they seldom, however, present themselves by day; and though in our immediate vicinity, and of considerable size, they are but rarely seen. If surprised in their haunts while it is light, they speedily escape by running; their wings being unfit for flight, except in the males of some species who make awkward attempts at flying. The night is their season of activity, when they issue from the crevices near the chimney, in quest of crumbs of bread or dough.

* Called vulgarly and mistakenly black beetles.

In this island the cockroach is probably always a domestic animal: in warmer countries, however, there are different kinds which haunt the fields in great numbers. The hakkerlac of the American isles, that voracious animal, which so greedily devours the provisions of the inhabitants, is of this genus.

The larvæ of all the different species of blattæ differ but little from the perfect insect, excepting in the total want of the wings and elytra. In that state meal is its common food; and of that necessary of life it is then extremely voracious. When meal is wanting, as must happen in the fields, it eats the roots of plants. There are ten species of this genus, named, for the most part, after the different countries which they inhabit.

GENUS II.—THE MANTIS, OR SOOTHSAYER,

Possesses a form the most romantic and extraordinary that is, perhaps, presented by any animated being. By the singular manner in which the soothsayer stretches out its fore-legs, it has acquired the reputation of a diviner, who could unfold all the secrets in the bosom of futurity; and because the insect often sits upon its four hind-legs, having the two fore ones raised up and folded together, the believing multitude have supposed it to be then holding intercourse with the Supreme Power, in the exercise of devotion.

GENUS III.—THE GRILLUS

Comprehends all the different kinds of locusts, and is divided by Linnæus into five tribes, consisting of sixty-one different kinds of animals. Their general characters are, a head inflected, armed with jaws, and furnished with palpi. All the feet are armed with two nails; the hind pair formed for leaping.

The tribe of achetæ, which comprehends in it all the different species of crickets, is distinguished by the bristles which spring from the extremity of the abdomen. This family have obtained their English name from the continual tiresome noise which they produce. The domestic achetæ usually take up their abode in ovens, and in the holes of walls around kitchen chimneys, where they are attracted by

the heat, and are very noisy companions to the country people, who, from some prejudice in their favour, seldom wish to destroy them.

The field cricket remains, during the day, pent up in some subterraneous habitation, whence it issues forth about sunset; when, in countries where these animals abound, the whole fields ring with their noise.

The mole cricket is by far the most hideous and extraordinary insect belonging to this tribe. It has obtained its name from the singular structure of its fore-legs, which are extremely broad and flat, and terminate in six large serrated claws, somewhat resembling the fore-feet of a mole. The whole animal is of a brown, dusky colour, very large and active. It frequently takes up its residence in hot-beds, to the great disturbance of the gardener; for it digs under ground, like the animal after which it is called, committing dreadful havock among the tender roots of the plants that are artificially raised there.

The tettigonia, or tribe of grasshoppers, is the next section into which the grylli are divided; and of it, the gryllus viridissimus is the most remarkable. The female carries, at the extremity of her abdomen, a kind of serrated spine, composed of two laminæ, and in shape broad, and turned up like the blade of a cutlass. These implements are employed by the female in digging in the ground, or in wood, holes for the reception of her ova; and this being a function in which the male has no share, he is unprovided with the instruments by which it is performed.

The female grasshopper possesses an amazing fecundity; she regularly deposits from four to seven hundred eggs at a time. The wonderful precautions which she takes for providing them security, and food for the young as soon as they are disclosed, merit our particular notice. With that lancet, which we have already described, she excavates a number of holes in the dried branch of a tree; into each of these holes eight or ten of her eggs are dropped; there they are surrounded with that kind of food which is most suitable for them in their larvæ state. The disposition of the eggs is in rows, and placed in the middle of the trees; the soft substance of which is the first food of the insect after it leaves

leaves the ovum. The insect that proceeds from each of these eggs, after it has grown for some time, and before reaching a size incompatible with escaping by the narrow mouth of the hole, takes a final departure from the place of its birth.

The larvæ having thus left their egg state, and acquired the use of their limbs, the two anterior of which are formed for digging the ground, soon apply them to that purpose, and excavate for themselves a subterraneous retreat among the roots of plants, which they gnaw, and support themselves upon the juices that exude from them. In this state they remain till they are ready to undergo another transformation, which introduces them into the open air in the form of winged insects.

A short time after the grasshopper appears in its last stage of perfection; it spreads over the meadows, which it fills with its chirruping strains, which are the calls of the male inviting the female to love. Some naturalists are of opinion that the notes of the grasshopper are produced by rubbing the two hind-legs of the animal against each other. M. de Reamur and Linnæus, who have minutely examined these insects, derive their vocal powers from a very different source. On examining the male, his body has been found provided with a small hole below the insertion of each wing, delicately constructed with organs of sound within, and covered over externally with a fine transparent membrane. It is by means of these organs, which, in the completeness and delicacy of their structure, may vie with those of the human voice, that some species of the grasshoppers produce their melody.

The locusts occupy the next section of this genus; a race of animals, unhappily for mankind, by far too well known by their destructive effects on the productions of the earth in many of the warmer regions of Asia and Africa. They are distinguished by a simple tail, and filiform antennæ.

Many of the locusts far exceed the grasshopper tribe in bulk, in rapidity of flight, and the powers of injuring mankind, by swarming upon the productions of the earth. The latter animals are unable to fly any considerable length; and the quantity of vegetable food which a few of them

sporting among the grass can destroy, is scarcely perceptible; but when a swarm of locusts, several miles in length, and two or three yards deep, settle upon a field, the consequences are truly alarming. The annals of many countries in the east have recorded their devastations, which at different periods have threatened the extinction of the human race. Happily for the inhabitants of Europe, the coldness of their climate, and the humidity of their soil, are unfavourable to their production. In some of the southern kingdoms, their visitations, though far less frequent than formerly, are still an object of terror: in general, however, their incursions are fatal to these animals; they visit us and perish.

The great West Indian locust, of all the animals of this genus, is the most formidable, when individually considered. The body is about the thickness of a goose quill, divided into ten annuli, and is six inches in length: it has two small eyes standing out of the head, like those of crabs; and two filiform antennæ. The whole body is studded with small excrescences, which are not much larger than the points of pins: its shape is roundish, diminishing in circumference towards the tail, which is bifurcated; between these forks the animal is armed with a dangerous sting, which invariably wounds any person who touches it. The poisonous matter with which this instrument is loaded, occasions a shivering and palpitation all over the body, which the inhabitants cure by rubbing the wound with palm oil.

GENUS IV.—THE FULGORA, OR LANTHORN FLY,

Is rare in Britain, only two species being caught in the island. It is the foreign animals of this tribe which have the singular quality of emitting flashes of light when they fly. This phenomenon is thought to be occasioned by the waving of the elytra, whose thinness renders the spots upon them transparent: the effect is probably heightened by some resplendent quality peculiar to the tribe, and by the golden yellow of the under wings bordered with black. However this may be, it is certain that in China there is a certain species of the fulgora, which blazes with an amazing lustre, that marks the path of the animal wherever it directs

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its course, and which, in the minds of the timid and superstitious, creates images of danger of the most tremendous kind.

Linnaeus enumerates nine different species, one only of which he has termed European, from its residence in that quarter of the globe.

The *fulgora candelaria* of Linnaeus is of a fresh green colour on the ground of the elytra figured and striated with lines of a pale yellow; the wings are of a deep and beautiful yellow, with a band of glossy black, bordering their extremities; the head and thorax are generally of a ruddy brown, and the animal emits flashes of lightning as it flies in the dark.

GENUS V.—THE CICADA, OR FLEA LOCUST.

The insects of this tribe obtain sometimes the name of grasshoppers, or froghoppers, as well as the *tettigoniæ* already mentioned. They are far inferior in size as well as in their destructive powers, being produced from small larvæ that are found on plants, in a kind of foam, which is not unlike a spittle, and is in some parts called the cuckoo-spittle, and is probably intended by nature as a shelter to the larvæ against the search of other animals, to which it would fall a prey: perhaps, too, this moisture may be designed for screening the insect, in its tender age, from the beams of the sun, and the rough elements, by which its body might then be injured.

The *cicada sanguinolenta* of Linnaeus is the most beautiful of all our froghoppers: it is of a shining black, both above and below; the elytra have each three large spots of a fine crimson.

GENUS VI.—THE NOTONECTA, OR BOAT FLY.

This tribe comprehends in it only three species; the grey, the striated, and the small notonectæ.

The notonectæ have obtained their name from the singular manner in which they swim on the back, presenting the belly uppermost. This situation seems admirably fitted for the creature's manner of feeding, which is said to be on the under side of plants that grow on the surface of the

water ; the animal, by having its mouth turned upwards, is capable of taking its food with greater convenience : nor are its motions in the least impeded by this awkward posture ; on the contrary, it is very nimble, diving down instantaneously, when it perceives danger, and rising again to the surface, the two hind-legs all the while serving for paddles.

GENUS VII.—THE NEPA, OR WATER SCORPION.

The eggs of the water scorpion are of an oblong shape, and are concealed in the stalk of a bulrush, or other water plant. These plants may be removed, and placed in water near the naturalist, who may thus have an opportunity of seeing them hatched and coming forth animated larvæ immediately under his eye. The water scorpions, when thus excluded from the eggs, remain for some time in the state of worms in the place of their nativity. When they arrive at their full size, and are metamorphosed into complete insects, they are sometimes an inch in length, and nearly half as broad : they destroy, like wolves among sheep, twenty times as many as their hunger requires. If one of them is placed in a basin of water with thirty or forty worms of the libellula, each as large as itself, it will destroy them all in a very short space, getting on their backs, and piercing them through the body with its rostrum.

These animals, though they live upon the water by day, are capable of taking long flights from one pool to another in quest of food : this they are probably often obliged to attempt, from the fierceness of their manners, by which the insects in their vicinity must be soon destroyed. Though so formidable to other creatures, they are nevertheless haunted by a little louse, which probably repays the injuries which the water scorpion so frequently commits upon others.

GENUS VIII.—CIMEX. THE BUG

Is equally remarkable for its hideous appearance and its voracious habits. Of this nauseous race Linnæus reckons up no less than an hundred and twenty-one different kinds.

This troublesome inmate has attracted the notice of almost every naturalist ; and it would be well for the rest of mankind

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kind that the knowledge of it had been confined to them. By day it lurks, like a robber, in the most secret parts of the bed and apartment; takes advantage of every chink and cranny to make a secure lodgment, and contrives its habitation with so much art, that scarce any industry can discover its retreat. So cautiously does it avoid the light, that if candles, or a strong fire, are kept burning, it will seldom venture from its hiding place. As soon, however, as darkness promises security, it issues from every crevice, drops from the roof, or crawls from behind the arras; and unhappy is the patient to whom these creatures direct their course.

The house bug differs from all the rest of the genus, in having neither wings nor elytra. It has two small brown eyes, and two antennæ, having each three articulations. Underneath these lies the crooked trunk, its instrument of torture, which, when the animal is in motion, lies inflected upon the breast.

Cleanliness is the best antidote against these animals, as their hostile attacks appear the proper punishment of its neglect. Many secret compositions are made use of to destroy them; but that object seems rather the effect of assiduity than of a cure. Mixtures have been made for this purpose, of soap, verdigrise, and Scotch snuff, which are said to be effectual. After having taken down the bed three or four different times, and washing it with a solution of corrosive sublimate, they have been banished. The smoke of peat, where that fuel is to be had, is the most efficacious of all applications, and uniformly destroys these troublesome animals wherever it is applied.

The field bugs have all wings, and inhabit plants as various as their shape and colour. In their larva state they are very active, and differ but little from the perfect animal, except in their wanting wings. In this state, however, as well as that of a chrysalid, the animal is incapable of propagating its kind. After the last transformation the wings unfold; and the impregnated female lays her eggs commonly ranged one beside another, upon the leaf of a plant.

GENUS IX.—APHIS. THE PLANT LOUSE.

Plant lice are seen on the leaves of a great variety of plants, and often in society, and in considerable numbers. At certain seasons they are viviparous, and at others they produce inanimated eggs, which remain in that state till the action of the sun calls forth their vital powers. The fœtus, when the parent is viviparous, shews signs of life before it is fairly excluded from the body. Sometimes the same mother gives birth to near twenty in a day, without appearing less in bulk than before. If one of these pregnant females is taken and pressed between the finger and the thumb, a still greater number will be forced from her body, one following another like a string of beads, and growing smaller and smaller, in proportion as their period of natural delivery was more remote.

The young, immediately after being protruded from the mother, are always of a paler colour than the parent. They have then the entire use of their limbs, and go in quest of food. All the different kinds cast their skin; and it is after these developements that such of them as have wings obtain these parts.

They are furnished with a small trunk, which pierces the leaves, and enables the animal to extract the juices proper for its nourishment. Many plants grow deformed by the number of punctures thus made upon their leaves, and decay from the want of their usual sap. Some thrive even when covered with these insects, while others rise up into small hollow tubercles, which, on being broken open, disclose the numberless families that inhabit them.

These galls or excrescences formed by the plant louse, and which often so much disfigure the shrubs upon which they grow, are in China, Persia, and the Levant, applied successfully in dying. Some species formed in these more northerly climates might probably be turned to the same useful purpose, were their virtues understood.

GENUS X.—CHERMES.

Nearly allied to the last tribe of insects, but of superior size, is the chermes, a race termed *gall insects* by M. de Reaumur.

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The tubercles raised upon the branches of trees by the punctures of the cherines, not only become the residence of the animal, but also of its eggs and larva, which are contained in those cells with which they abound. The box-tree chermes produces no excrescences upon that plant. Its punctures make the leaves bend in towards each other at their extremity, where their union forms, at the summit of the branch, a hollow knob, in which the larvæ of that insect find shelter.

Both in their larva and chrysalid state, many of the chermes eject from the anus a white saccharine substance resembling manna: within the hollow balls formed by the box leaves, there are small soft grains of this substance deposited; and in that state it is frequently seen issuing from the anus of the insect that dwells there.

GENUS XI.—COCCUS. THE COCHINEAL.

The insects of this tribe present the most singular form which we have, perhaps, yet surveyed in this department of animated nature. They were long imported into Europe as an article of commerce, before their claim to rank among animals was admitted.

Several species of these insects are found upon European plants; that, however, upon the pimpinella roots, called the grain of scarlet of Poland, was long known in this part of the world as a dye, before the Mexican cochineal was introduced.

The drug at present most in estimation, for the fine colour it gives our clothes, is the cochineal of Mexico, an insect domesticated and reared with great care by the Indians. It grows not upon the root, but upon the leaves of a plant known by the various names of opuntia, nopal, racket, and cardassia. The method of cultivating them upon this tree, practised by the Mexicans, is by collecting ten or twelve together into one nidus, made of moss or cotton; these insects being put into these nests, are fixed to the branches of opuntia, which is planted around their houses.

Cochineals have not long remained in this state when they produce swarms of young, which disperse and feed among the juicy leaves, and there produce a new generation.

tion. The insects having thus multiplied, are gathered three different seasons in the year : the first is performed by taking away the nests that were placed originally upon the tree ; the second, by picking the cochineal from the leaves with pincers ; and the third, at the approach of winter, by cutting off the leaves, which are yet loaded with insects : this last contains animals in various stages of their existence, and of different sizes ; it is therefore reckoned of inferior quality on that account, and also, because, in scraping the leaf, some part of the epiderm necessarily comes off, and mixes with the cochineal. The Spaniards call it granilla.

Having thus collected the insects, the next part of the process is killing them and preparing them for sale ; and according as this is performed, the cochineal is supposed to be of different quality, and obtains various names, according as its colour is supposed to be more or less affected. That which is prepared by the gentle heat of ovens is of an ash-grey or mottled colour, and named jaspeada. If the insects are deprived of life by plunging them with baskets into hot water, it then goes by the name of renegrada, and is not covered over with that white powder, common to the other kinds. Lastly, it bears the appellation of negra, if destroyed upon the hot plates that have been used for the roasting of maize.

But whatever may be the method of preparation, that cochineal is always found superior, both in quality and quantity, which has been produced upon the cultivated trees. The cultivation of the opuntia, therefore, and the raising of cochineal, is a trade almost universal throughout Mexico. Eight hundred and eighty thousand pound weight of this article is said to be annually imported into Europe, where it sells at a high price. Various are the uses to which our luxuries, and the arts subservient to them, have applied this drug. It is used in dying, and produces, along with other substances, a variety of shades of scarlet : it furnishes painters with many lively shades of scarlet, crimson, and red. When ground into powder, it enters copiously into that carminative mixture which imitates the bloom of youth on the human cheek, and which is so frequently had recourse to by the fair, who would repair the injuries of

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time: had it really this effect, the Mexicans, we must allow, would command a treasure of greater value than all the mines of the new world.

GENUS XII.—THRIPS.

The animals of this family are so minute, that they are not objects of discussion, unless viewed with a microscope; to the naked eye they appear rather like atoms than living animals.

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XV.

THE LIFE OF DEMOSTHENES.

HAVING given the life of the famous Roman orator Cicero, in one of our numbers, it becomes necessary, in a regular course, that we should present our juvenile readers with that of *Demosthenes*.

This great man was the son of an eminent sword-maker at Athens; but there are some who, to disparage Demosthenes, assert that his father was but a common blacksmith. But what is lineage or profession, when a man ennobles himself by his genius, his talents, or his virtues?

It is probable, however, that the circumstances of the father of Demosthenes were not affluent; and, when he died, he left his son, then only seven years of age, in the hands of guardians, who badly discharged their trust, by neglecting his education entirely. His mother was also guilty of the same want of attention to the culture of his mind, through a foolish fondness for him.

At the age of sixteen, however, he entered himself in the school of *Isæus*, where he contracted those ill habits which he afterwards broke off with great difficulty.

His eager inclination to the study of oratory was occasioned by Callistratus, who being to plead in open court on a very remarkable cause, the expectation of the issue was great, as well on account of the ability of the orator, as from the importance of the action itself. Demosthenes having heard the
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tutors and students agree to be present at this trial, with much importunity persuaded his master to take him along with him, who complied with his request.

Callistratus succeeded in carrying his cause, and Demosthenes was so enraptured with his eloquence, and the applauses of the audience, that from thenceforward he resolved to abandon all other pursuits, and devote himself wholly to elocution. He soon found occasion to exercise his talent, for he was obliged to go to law with his guardians Aphobus and Onetor, and to write orations against them; but he could not for all this recover any considerable part of his father's estate, yet he obtained a confidence in speaking, and some competent experience in it. But when he first addressed himself to the popular assemblies he met with great discouragements, and was derided for his odd and uncouth way of speaking; besides which, his periods were confused, and his arguments were forced. He had also a weakness in his voice, a perplexed and indistinct utterance, a shortness of breath, which by breaking and disjointing his sentences, much obscured and weakened the sense of what he spoke; so that in the end being quite disheartened, he left off pleading for some time, and quite forsook the assembly. But by the advice of his friends he determined at length to overcome all difficulties; and being convinced how much grace and ornament accrue to speech from a proper action, he began to esteem it as the grand requisite in oratory. What Nature had denied him he resolved to attain by labour; and his eagerness in the pursuit of eloquence was so violent, that he found nothing impossible or disproportioned to its force.

As it was necessary for him to go into retirement, that he might study to advantage, he contrived an odd expedient to render confinement indispensable, and that was, to shave one half of his head, so that he could not appear publicly without exposing himself to ridicule.

He consequently remained in seclusion several months, and in this state devoted all his hours to the study of eloquence.

But nothing can be more surprising than the means he adopted to remedy the impediments under which he laboured.

boured. Can any thing be conceived more extraordinary than for a man to go and declaim upon the sea-shore in stormy weather, that by hearing the roaring of the waves, he might accustom himself to regard the commotions of popular assemblies with indifference? What could be more painful than to speak as he did with vehemence, while climbing up to the top of steep and craggy places, that he might strengthen his voice? His tongue was so large, that he could not pronounce certain letters without much difficulty, to correct which defect he used to declaim with pebbles in his mouth. His practice also was to speak before a mirror, that his action might be graceful and easy. All these particulars shew an uncommon perseverance, and present us with a striking and instructive lesson, never to account any laudable pursuit as impossible.

By these exertions Demosthenes at length acquired such a mastery in his profession, such a habit of nervous and convincing eloquence, as enabled him to defy the strongest opposition.

The first cause he undertook after he re-appeared in public, was the defence of his country against Philip, and the Macedonians. He behaved so nobly in the cause of liberty, that he soon grew famous, and his eloquence was the universal topic of conversation and applause. He was almost adored throughout Greece; the king of Persia courted him, and even by Philip himself he was more esteemed than all the other orators.

He also observed an uniform steadiness in his conduct, and the party and way of government which he held with at the beginning, he maintained to the last. The authority, armies, threats, and promises of Philip could never work upon him; and, to use the expression of Plutarch, all the gold of Macedonia could not bribe him.

This made Antipater, one of Alexander's successors, say, had any one of his ministers been as incorrupt as Demosthenes he would have been invincible. This remark gives us a greater idea of the virtue of this orator than of his eloquence. It was the love of his country that prevailed upon him to undertake the government; for he made that the employ-

ment of his virtue which others had engaged in to serve their interest. Such a man as this, said the same monarch, would be very necessary for me to advise with in my present affairs, for he would speak his mind frankly and truly, and not disguise his sentiments, like the flatterers around me.

But though he defended himself against the corrupt gold of Philip, who was a sworn enemy to the Athenians, he could not resist the Persian present that was made him by Darius, who was a friend to the commonwealth.

His inveterate hatred of Philip urged him to spirit up a war, by uniting all Greece in a confederacy against him; but the Macedonian arms prevailed. In this action Demosthenes behaved with great cowardice; for deserting his post, and throwing away his arms, he ran away most shamefully. So great indeed was his fright, that he mistook a bush, which caught hold of his garment, for an enemy, and cried out *quarter*. This defeat occasioned his enemies to accuse him to the people, but he was acquitted. After the death of Philip he attempted the same designs against Alexander; but when that conqueror entered *Bæotia* with his army, the courage of the Athenians deserted them, and they resolved to send ambassadors to the young prince, among which number Demosthenes was one, but, his heart failing him, he returned back from *Citæron*, and left the embassy.

Soon after this Demosthenes gave his enemies a remarkable advantage against him; for they found reason to accuse him of having received twenty talents, with a piece of plate of great value, from an officer belonging to Alexander, who being disgraced for the bad management of the revenue had retired to Athens. This present brought the orator under a suspicion, because it came from one who had been a servant of the most declared enemy of the republic. Dinarchus, prevailed upon by the enemies of Demosthenes, accused him on that account of bribery to the people; and such was his misfortune, that he could not be heard in justification of himself. The esteem they had for him was turned into contempt; and when he came to the bar he was fined fifty talents, and committed to prison. But soon growing weary of his confinement he made his escape, but

was

was retaken, and then banished from the commonwealth. He bore his exile in a very unmanly manner, and, after much sollicitation, obtained his recal.

On the report that Antipater and Cratenus, after Alexander's death, were coming to Athens, Demosthenes, with his party, took their opportunity of escaping from the city; but, at the instance of Demades, they were condemned. They separated, some flying to one place, and some to another, as Antipater had sent out soldiers, under Archias, in quest of them. Demosthenes had taken sanctuary in the temple of Neptune, in Calabria, where he was found by Archias, who endeavoured to persuade him that Antipater meant him no harm; but the orator giving no credit to his assurances, and thinking his death certain, took poison, which he always carried about with him, and expired, after uttering these remarkable words: "Go, and let thy master know that Demosthenes will not, on any account, be obliged to the usurper of his country."

This happened before Christ 322, and in the 60th year of his age.

After his death the Athenians decreed that his family should be maintained at the public expence, and they erected a statue of brass to his memory, on the pedestal of which was engraven this remarkable inscription:

If with the wisdom of thy mind,
An equal courage had been join'd,
Greece ne'er had suffer'd so great harms,
Enslav'd by Macedonian arms.

Demosthenes was of a choleric, melancholy temper, which made him obstinate and violent in his resolutions. His manner of life, however, was correct, and his morals were rigidly severe. He had a great and noble genius for all the sciences, and a spirit that enabled him to surmount all the difficulties he met with in his endeavours to acquire excellence. To his natural vehemence he added such lively exterior actions, that it was impossible to hear him without feeling at the very bottom of the soul the most sensible effects. Nothing can give us a better idea of the great advantage Demosthenes had over all other men in the art of

O 2 pronounciation,

pronunciation, and in a graceful action, than the testimony of his greatest rival? Æschines being cast in a suit he was engaged in against Ctesiphon, whom Demosthenes had defended, through shame and grief went to Rhodes, where some of his friends importuning him to repeat to them the oration he had made against Ctesiphon, he read it over to them; on which they likewise requested of him to read that of Demosthenes; and when he had finished it, they admired it greatly. Æschines, not at all piqued at the preference they gave to the composition of his antagonist, thus nobly observed: "What would you have said, had you heard him speak it himself."

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF CHINA.

(Continued from page 84.)

IN tracing the manners of the Chinese we shall find very little resemblance to those of any other nation in the known world; and what is very remarkable, every custom practised some thousand years ago is still preserved among them. The caprice of fashion, and the rage for novelty, have never affected the Chinese character.

Of Chinese Marriages.

Great attention has ever been paid in China to public decency. Marriage is particularly protected, as well by the authority of the law as by the general spirit of order and decorum. The adulterer is always punished with death, and the same punishment is usually inflicted upon him who seduces an unmarried woman from the paths of rectitude.

A Chinese enters into the married state often without ever having seen the woman whom he espouses; he knows nothing of her but what he learns from some female relation, who acts the part of a match-maker. But if he is imposed on, either with respect to her age or figure, he may obtain a divorce. The same matrons who negotiate the marriage, determine

determine also the sum which the intended husband must pay to the parents of the bride; for, in China, a father gives no dowry to his daughter, but receives a certain sum from his son-in-law as a purchase.

The parents of the bride fix the day of marriage, always taking care to consult the calendar, for the purpose of selecting one that is favourable to so important an event. At the appointed time the bride is placed in a chair or close palankin, and is surrounded by persons of both sexes, carrying torches and flambeaux, even in the middle of the day. A troop of musicians, with fifes, drums, and hautboys, march before the chair, and her family follow behind. The key of the chair in which she is shut up is committed to the care of a trusty servant, to be delivered to the husband only, who, richly dressed, waits at his gate for the arrival of the procession. When it approaches, the key is put into his hands, by means of which, at the first glance, he learns his fortune. If he is discontented with his intended spouse, he suddenly shuts the chair, and sends her back to her relations; but to get rid of her, it costs him a sum equal to that which he gave to obtain her. If the husband is contented, she descends from her chair, and enters the house; she is then committed into the hands of the women, who partake of an entertainment, and remain with her the whole day; the male part of the guests are treated in like manner by the husband. This part of the ceremony prevails in all Chinese grand entertainments: the women amuse themselves separately, and the men do the same in another apartment. The pomp increases according to the riches and rank of the parties.

A Chinese is only permitted to have one wife, but he may purchase several concubines, who are more the servants of the lawful wife than rivals in authority. She has the same power over them as over the meanest domestic in the family: their children are at her disposal, but they have a right to share with those born of her in their paternal succession.

The Treatment of Chinese Women.

The Chinese women seldom quit their apartment, which

is situated in the most retired part of the house, and there they live secluded from all society but that of their domestics. There must be two apartments in every house, the interior for the woman, and the exterior for her husband. These must be separated by a wooden partition, or wall, and the door carefully guarded. The husband is not at liberty to enter the inner apartment, nor may the wife quit it without a sufficient cause. A wife is not mistress of herself, she has nothing at her own disposal, and can give no orders but within the precincts of her own apartment, to which all her authority is confined.

This strictness with regard to the women seems to be dispensed with in some cases; for in the processions exhibited by the British embassy under Lord Macartney, the female spectators composed at least one-fourth of the whole number, who appear to be extremely diverted, and curious in their several enquiries.

There is no country in the world in which the women live in a greater state of humiliation than in China. Those whose husbands are of high rank are always confined, those of the second class are a sort of upper servants, deprived of all liberty, while those of the lower are partakers with the men of the severest kind of labour, and if they become mothers it is an additional burthen, since while at work, they carry the child tied upon the back. Such is the fate of the Chinese women, who endure it with a patience and submission which habit alone can teach.

Of Chinese Education.

We shall mention some particulars respecting the education of the Chinese youth. At the age of six the males are made acquainted with the names of the principal parts of the world. At eight they are instructed in the rules of politeness. The calendar becomes their study at the age of nine, and at ten they are sent to a public school, where they learn reading, writing, and arithmetic. From thirteen till fifteen they are taught music; and every thing which they sing consists of moral precepts. They are then taught to handle the bow, and to mount on horseback. At twenty years of age they receive the first cap, if they are judged to deserve

deserve it; and then they are permitted to wear silk dresses, ornamented with furs.

In every city and town, and almost in every village, there are public schools for the purpose of teaching the sciences. But parents possessed of a certain fortune provide preceptors for their children at home, who endeavour to form their minds to virtue, and to make them acquainted with the laws and history of their country.

The education of females is intended to give them a taste for solitude, and to inspire them with habits of modesty and taciturnity. If their parents are rich, they are instructed in all sorts of needle work, and to play upon different instruments of music, in order that their charms and accomplishments may render them agreeable to the persons into whose hands they may chance to fall.

The handsomest are generally bought for the court and principal mandarines. One who unites beauty with other accomplishments, fetches from four hundred and fifty to seven hundred louis-d'ors, while there are some who sell for less than one hundred. Hence it is evident that the women in China, even among the first personages of the empire, are considered and treated as an article of trade.

Chinese Amusements.

As the Chinese employ most of their time in attending to the serious duties of life, they can bestow but a small portion on amusements. The sports of the chase are free to every inhabitant of China. Whoever wishes to enjoy it alone, causes a great quantity of game to be shut up in a close park. Every farmer is at liberty to kill the game which come on his fields. Fishing is considered as an amusement, as well as an object of commerce. They catch fish by nets of different kinds, and private people employ a line. Birds are also trained to catch fish, in the same manner as dogs are taught to pursue game.

This method of fishing is practised in boats, numbers of which may be seen on the water at sun-rising with the fishing-birds perched on their prows. The men, having made several turns with their boats, beat the water with one of their oars, which is the signal for the birds to disperse themselves,

themselves, plunge into the river, and seize by the middle what fish they can; they then rise to the surface, and each carries its capture to the boat to which it belongs. The fisherman receives the fish from the birds, which they are prevented from swallowing, by a ring placed on the gullet for the purpose. When they have done fishing the ring is taken off, and they are then suffered to feed. If the fish taken happens to be too large for the strength of the bird, another will come to its assistance: one takes it by the head and another by the tail, and in this manner they transport it to their master.

Another method of fishing, which is peculiar to the Chinese, is this; they nail, in a sloping direction, upon the edges of a long narrow boat, a board of two feet wide, which, from its shining hue, represents the colour of the water at moonlight, the only time this mode of fishing is practised. The fish mistake the plank for the water, throw themselves upon it, and fall into the boat. The soldiers fish with bows and arrows, tridents, &c.

The Chinese have a singular method of playing at shuttlecock, a representation of which is given in the plate. Several young men stand in a circle, but they are not allowed upon any consideration to make use of the hand or arm in the game. When once the shuttlecock is thrown up, they by turns take a short run, and, springing from the ground, meet the descending shuttlecock with the sole of the foot, and drive it again with great force and velocity into the air. In this game the Chinese are so expert, that they seldom miss their mark, and very rarely fail in giving it the proper direction. With the games of chance their nation is wholly unacquainted, nor are the people allowed to indulge in any amusement not authorised by law.

THE ANTIENT AND MODERN HISTORY OF NATIONS.

OF THE ASSYRIAN MONARCHY.

AS we intend to give a complete illustration of universal history, we shall now proceed to describe the four great empires, viz. the ASSYRIAN, the PERSIAN, the GRE-

CIAN,

ELIAN, and the ROMAN. These, on account of their including so large and important part of history in general, have usually been denominated *the four monarchies*; and it will be seen, that from one or the other of these we shall be able to trace the rise and foundation of those histories which we shall describe in the subsequent numbers of this work.

The Assyrian monarchy is the most antient; of its government and constitution we know but little. In the most flourishing period of the history, their princes appear to have been purely despotic and the succession hereditary.

Belus is placed at the head of the series of Assyrian kings, and is supposed to have been the founder of the city of Babylon. He afterwards made himself master of Assyria, and, by the moderation of his government, became very popular among his new subjects; he built several considerable cities, of which the most magnificent was the celebrated Nineveh, where he founded the monarchy in the year 790 before Christ.*

Belus was succeeded by his son Ninus, in honour of whom Nineveh had received its name; and he, in gratitude to his father, obliged his subjects to pay divine honours to the memory of Belus, who was probably the first king that

* M. Rollin and many other writers suppose Belus to be the same with Nimrod, the great-grand-son of Noah. M. Rollin, however, was aware that the exploits of Ninus and Semiramis, the immediate successors of Belus, but ill accorded with times so near the flood. He, however, willing to defend his own theory, supposed that the Greek historians had, through ignorance of, or inattention to chronology, ascribed to these antient kings enterprises and exploits which, in fact, had been achieved by those who flourished in later times. See Rollin's *Ant. Hist.* vol. II. Sir Isaac Newton, however, admitting that Nimrod did found a kingdom at Babylon which might extend into Assyria, supposes that it was not very large, nor enjoyed a long duration, it being the custom in those early days for every father to divide his territories amongst his sons. Thus Noah was monarch of the world: Cham was king of Africa, and Japhet of all Europe and Asia minor; but they left no standing kingdoms. And after the days of Nimrod we hear no more of an Assyrian empire till the reign of Pul or Belus.—See Newton's *Chronology of Antient Kingdoms amended.*

the people deified on account of his great actions. Nineveh, which was finished during this reign, has been greatly celebrated for its extent and magnificence. The wall which surrounded the city was sixty miles in length, an hundred feet high, and of a thickness sufficient for three chariots to go upon it abreast. This wall was fortified and adorned with fifteen hundred towers.

Ninus made war upon many other nations, for the sake of extending his empire; he reduced the greater part of Asia, and totally subdued Bactria, the northern province of Persia, now known by the name of Chorassan. After this he returned to Nineveh, and married Semiramis, by whom he had a son named Ninyas. Ninus appears to have been the first prince who united the spirit of conquest with political science. He divided the Assyrian empire into provinces;—instituted three councils and three tribunals, by which the government was administered, and justice distributed. He died about the year 760, B. C.

Semiramis assumed the sovereign power during the minority of her son, and swayed the sceptre with great dignity for the space of forty years. She enlarged her empire, and visited every part of her vast dominions; built cities in various districts of the Assyrian kingdom; cut roads through mountains, in order to facilitate the intercourse between contiguous provinces. Encouraged by her various successes, she attacked India with an armed force. On this occasion her army consisted of three hundred thousand foot and fifty thousand horse, besides camels and chariots of war. The Indian monarch having notice of her approach, sent ambassadors to enquire who she was, and by what right she came to attack his dominions, adding, that her audacity should meet the punishment it deserved. "Tell your master," replied the queen, "that in a little time I myself will let him know who I am." She immediately advanced to the river *Indus*, and attempted to pass it with her whole army. Their passage was a long time disputed, but, after a bloody battle, she put her enemies to flight, and advanced into the heart of the country, where a second engagement ensued, in which her army was routed, and herself wounded; she, however, with the remains of her shattered

army

army repassed the river, and returned to her own country. Semiramis and Alexander were the only persons that ever ventured to carry war beyond the Indus.

Ninyas, who succeeded his mother, being in no respect like his parents, devoted himself to his pleasures, leaving the care and conduct of his government to approved and experienced officers. Of him it may be said, that he ascended the throne of his ancestors, lived in indolence, and died in their palace at Nineveh.

Sardanapulus, the last of the Assyrian monarchs, led a most effeminate and voluptuous course of life. His conduct excited the general indignation of the officers employed under him. Arbaces, governor of Media, enraged at beholding the monarch spinning among his women, withdrew his allegiance, and excited a rebellion against him. In this revolt he was encouraged by the advice and assistance of a Chaldean priest, who engaged the Babylonians to follow the example of the Medes. These powerful provinces, aided by the Persians, and other allies, who despised the effeminacy, or dreaded the tyranny of their Assyrian masters, attacked the empire on all sides. Their most vigorous efforts were, in the beginning, unsuccessful. Firm and determined, however, in their opposition, they at length prevailed, defeated the Assyrian army, besieged Sardanapulus in his capital, which they demolished, and became masters of the empire about the year 711, B. C.

After the death of Sardanapulus the Assyrian empire was split into three kingdoms, viz. the Median, Assyrian, and Babylonian: the first king of the Median empire was Arbaces, who reigned at Ecbatana, the metropolis of Media. This kingdom lasted till the time of Astyages, who was subdued, and divested of his kingdom by Cyrus. The metropolis of the second Assyrian kingdom was Nineveh; of which the first monarch was Phul, who was succeeded by Tiglathpileser, Salmanassar, Sennacherib, and at last by Assarhadon, who took possession of the kingdom of Babylon. After the death of Assarhadon the Assyrian kingdom became subject to the Medes and Babylonians, who destroyed the city of Nineveh, in the year 606, B. C. The most celebrated

brated of the kings of Babylon was Nebuchadnezzar, who subdued all the east. Darius, the Mede, was the last king, who being conquered by Cyrus, king of Persia, the Babylonians, as well as the Medes, and with them the Assyrians, submitted to the Persians. Thus, in the reign of Cyrus, there arose a second monarchy, generally known by the name of the Persian monarchy. An account of which we shall give in our next number.

During the first monarchy, Egypt, of which we have given a compendious history in the second volume of this work, flourished, and claims the admiration of posterity on various accounts.

Next to the Egyptians, the Phœnicians were the most celebrated. Their skill in maritime affairs; their address and excellent policy in commercial concerns, have ever excited applause. Tyre was their chief city, which was taken by Nebuchadnezzar, about the year 570, B. C. Pygmalion is well known as a Phœnician monarch; whose sister, Dido, built Carthage.

The kingdom of the Lydians flourished under the first monarchy, chiefly during the reign of Cræsus, whose dominion was far extended over the regions of Asia, and who was considered the richest king of his time.

This age produced Homer, Hesiod, Æsop, and the seven wise men of Greece. To this period must be referred the Sibyls, women famous for their prophecies, but of whom we have no very certain or accurate accounts, though there is no doubt but that the Romans had books denominated Sibylline, which they consulted as divine oracles upon particular emergencies.

The office of consulting these sacred writings was first committed to two persons, called *duumviri*; afterwards to ten, called the *decemviri*, then to fifteen, and at last to forty. The punishment for improperly divulging these answers was very severe, the criminal being sentenced to be put into a sack with a venomous serpent, and then thrown together into the sea.

During the first monarchy philosophy flourished in Egypt, and astronomy in Chaldea; and the celebrated cities of Nineveh

neveh and Babylon are the most decided proofs that the Assyrians and Chaldeans were well skilled in works of architecture and mechanics.

Of Nineveh we have already spoken; Babylon was built by Semiramis, with a view of emulating, or even exceeding in glory that city. The circumference of both cities was the same. The wall which surrounded Babylon was three hundred and fifty feet high, double the breadth of that of Nineveh. It is supposed to have been situated on the river Euphrates, that divided it into two parts, which were united by means of a bridge made of cedar. Quays of beautiful marble adorned the banks of the river. On one bank stood the magnificent temple of *Bel*, and on the other the palace of the queen. These two edifices communicated by a passage under the bed of the river. Near the citadel were the *borti pensiles*, or hanging gardens, made by one of the kings to please his lady, who was a Persian by birth, and who, desirous of seeing meadows on mountains, as in her own country, prevailed on him to raise artificial gardens, which, with trees and meadows, might resemble those of Persia. Vaulted arches were, for this purpose, raised from the ground one above another, to an almost inconceivable height, and of a magnitude and strength sufficient to support the vast weight of the whole garden.

PRACTICAL INSTRUCTIONS

On Taste, Literature, and the Art of Composition.

CONTINUED IN A SERIES OF LETTERS FROM A FATHER TO
HIS SON.

LETTER XIV.

My dear George,

HAVING already considered composition as it consists of words and sentences, I shall proceed now to treat of eloquence or public speaking. In my former letters I had only regard to words, but here we must attend to the sentiments. To be more solicitous about the turn of a pe-

riod than the sense of it, is a sign of a weak and trifling genius; and too great anxiety about words cools the imagination, and checks the mind in the pursuit of things, and by that means produces either stiffness or licentiousness of expression. Quintilian defines rhetoric, "*Ars bene dicendi.*" But as this seems undetermined, I should rather define it, "*the art of persuasion.*" There are four qualifications essentially necessary in an orator:

1st. Solid argument.

2nd. A clear method.

3d. A character of probity appearing in the speaker.

4thly. A proper address.

Without the first of these, however, I must observe, the other qualifications are useless; and the man who employs them is only a sophist, not an orator. Unless these arguments also are placed in a clear, natural manner, they may lose all their effect, by not being properly understood.

Without a good opinion of the orator's probity and virtue an audience will not attend to what he says, being always afraid he is not speaking the truth. And, lastly, though they entertain ever so good an opinion of an orator, though his arguments are strong, just, and natural, yet they will lose much of their effect, unless they are accompanied with the elegancies of composition, and the graces of utterance.

I shall therefore consider each of these in order; but it will first be proper to take a view of the usefulness of eloquence, and the authors who have brought it gradually to its present perfection.

In every art it is necessary to consider its usefulness; and if, with Quintilian, we affirm, that he only deserves the name of an orator who is employed on the side of virtue, the importance of this art will clearly appear. Some have made conviction the object of rhetoric, but I rather chuse to place it in persuasion. Conviction only influences the understanding and judgment. Persuasion bends the will and the heart.

Our understanding may be convinced in a certain manner, yet we may remain still inactive. But the orator must go farther; he must not only convince men that things or
actions

actions are right, but he must persuade their wills, and rouse them to action. Perhaps it may be objected, that since persuasion is the object of eloquence, it may persuade to evil as well as to good: the same may be said of reason or knowledge, have they not been perverted, and made subservient to the worst of purposes? and do we not see that bad men may abuse every thing? Three kinds or degrees of eloquence may be distinguished. The first, or lowest kind, is designed to please, by extolling the good qualities of any person; such are panegyrics, funeral orations, and complimentary discourses, addressed to great men.

The second is intended to convince, by removing prejudices, and advancing proper arguments, &c. Of this kind is that of the bar.

The third is intended to move, agitate, and interest us in favour of something. This kind may be used with advantage sometimes in the pulpit, but the most proper theatre for it is a popular assembly.

This last species of eloquence should always be, or seem to be, the effect of passion. Whenever our feelings are very warm, we express our thoughts with much greater force than when they are perfectly calm. Every man in a passion is eloquent, and easily moves other people with that with which he is affected. Hence the rule, "*Si vis me flere dolendum est primum ipsi tibi.*" Hence, therefore, we find that studied thoughts and pretty sentences have but little effect when we intend to excite a violent passion. Hence sceptical writers, who doubt of every thing, and therefore speak with diffidence, are but ill calculated for raising these strong emotions of the mind. Hence we may likewise see the necessity of virtue and disinterestedness in the speaker, without which he can never be affected with genuine warmth in favour of truth.

In the lowest kind of eloquence there must be soundness of understanding, and a thorough knowledge of human nature, in order to address, in a proper manner, the different affections, ages, and habits of mankind. But in order to exert the highest effort of eloquence, the orator must be a person of fervid passions, to which must be united a great command of words, and a suitable address.

Liberty has been generally thought most favourable to eloquence; so Longinus: "May we not believe," says he, "that there is a solidity in the trite observation, that democracy is the nurse of genius; that fine writers will be found only in this kind of government, with which they flourish, and with which they die. Liberty, it is said, produces fine sentiments in men of genius, excites an honourable emulation, invigorates their hopes, and inspires an ambition and a desire of excellence. What is more, in free states there are prizes to be gained which are worth disputing; so that by this means the natural qualities of the orator are sharpened and polished by continual practice, and the liberty of their thoughts, as it is reasonable to expect, shines conspicuous in the freedom of their debates." Though this observation, however, is judicious in the main, it does not strictly apply to every kind of eloquence.

Ornamental eloquence, for instance, was carried to a very great height in France, from the reign of Louis XIV. to the late revolution, in their panegyrics and funeral orations. Several of their writers were even sublime, yet this sublimity was not of the highest kind.

The nervous or manly eloquence is only to be found united with freedom. Their eloquence in France, at the period to which I allude, was all confined to the pulpit or the bar; it never appeared in the popular assembly of their nation, as they were slaves to their monarch, and a popular assembly is undoubtedly the best school of eloquence. Hence if we inquire into the origin of true eloquence, in vain shall we endeavour to find it in the kingdoms of the eastern monarchs, or Egypt, though famous for the invention of many ingenious arts.

The Assyrians and Egyptians were both under the sway of despotic monarchs, who are generally unfriendly to eloquence, we must therefore look for its origin among the Greeks. Greece was originally divided into small states, governed by many petty princes, called Tyranni. In a course of time these petty princes were deposed or banished, and the government in the different states was purely democratical, from the battle of Marathon till the time of Alexander the Great, a period of one hundred and fifty years.

years. The people were generally influenced by the eloquence of their great men, and it was in this time that their best orators flourished. The Athenians, so celebrated for their quick and sprightly genius, lived under this kind of democracy; they had, indeed, a senate, which consisted of five hundred chosen persons, but the great appeal was made to the whole body of the people. In this form of government, therefore, the only means of promotion was eloquence. Hence the Athenians were remarkable for their love of eloquence, and the Attic taste is now become proverbial for a chaste and correct style. "Empedocles," says Quintilian, "was the first upon record who attempted any thing upon the art of eloquence." He, by Sir Isaac Newton's account, flourished about five hundred years after Troy was taken. Pisistratus lived about the same time that Solon divulged his laws, and, in truth, he was the subverter of them. He was a man of taste and learning, but we have little account of his character as an orator.

Of those great men who flourished between his time and the Peloponnesian war, we may account Pericles among the first in point of talent; he ruled the state for forty years, chiefly by his eloquence, and for his excellence in this art he was named Olympias: he is said to have been nervous, vehement, magnanimous; we are also told he was the first Athenian who wrote for the public. After Pericles, arose Cleon, Alcibiades, Critias, and Theramenes; the style of whose orations is preserved in Thucydides. It was majestic and grand, but somewhat obscure. The next orators were the Sophists; they proposed in an arrogant way (says Cicero) to teach how a bad cause may be so managed as to get the better of a good one; that is, they undertook to charm the ear, and strike the passions of their hearers, in such a manner, by sophistical reasoning, wit, and elegance of language, as to impose falsehood on them for truth; than which nothing could be more disingenuous in itself, or more prejudicial to society. Gorgias, of Leontium, excelled all the rest of the Sophists in reputation; for he was so highly applauded by all Greece, that a golden statue was erected to him at Delphos. He is said to have been so great a proficient in oratory, that in a public assembly he would under-

take to declaim extempore upon any subject that might be proposed, however difficult.

Isocrates was the scholar of Gorgias, and the most renowned of those who succeeded him; his periods are round, smooth, and flowing, but not vigorous. He was the first who studied a musical cadence, and has brought it to great perfection. He was so nice in this particular, that he spent no less than ten years in composing one oration, still extant, the Panegyric. Those who are inclined to study the rules given by the antients for a musical cadence, may consult Dionysius Hallicarnassus, whom we may safely recommend as one of the most judicious critics of antiquity. Cicero was a great admirer of Isocrates, and seems to have imitated him sometimes too much. A flowing style is, indeed, commendable in young writers, whose minds are naturally gay and lively; but this ostentatious manner ought to be corrected when the judgment is to be employed rather than the imagination.

Lyfias lived about the same time as Isocrates; he was master to Demosthenes; he was plain and simple, pure and Attic, but dry and frigid. Plato and Isæus (ten of whose orations are still extant) were hearers of Isocrates, as well as Demosthenes, who, by the assistance of a surprizing genius, united with indefatigable labour and industry, made so much advantage of his precepts, that he has always been esteemed by the best judges the prince of Grecian orators. I need not tell you that he retired into caves, that he might study without being disturbed, and that he kept pebbles in his mouth to correct a defect in his speech. He is said also to have hung a naked sword over his shoulders, to prevent him from using an ungraceful motion, to which he had habituated himself. From this we learn how natural disadvantages may be balanced by diligent application and study. He has displayed all the force of genius in his Olynthiæcs and Philippics; and we may see how much he is superior to his rival Æschines, by a comparison of their Orations de Corona.

But if we are charmed with his orations when we read them at this distant age, can we wonder that his audience were transported when he uttered them with all that force, precipitation,

precipitation, strength, and vehemence, of which he was master? His eloquence was so irresistible, that it bore down every thing before it, and he triumphed over all opposition: though, however, his style is strong, his words expressive, and his periods not destitute of harmony, yet it is not easy to perceive that rythmus, which some of his admirers pretend to find in his orations.

After Demosthenes Grecian eloquence rapidly declined, and we have scarcely any orators that deserve the name, except Demetrius Phalereus, who lived in the next age, and was not without merit.

FIRST PRIZE ESSAY,

On the Subject for No. 15, of the MONTHLY PRECEPTOR,

“ To shew by argument and example the excellence of Gratitude as a moral and christian virtue.”

By Master WILLIAM AINGER,

Pupil of the Rev. G. BURGESS, of Whittlesea, in the Isle of Ely, not 16.

CREATED to exist in a state of society, and almost incapable of experiencing solitary gratifications, mankind can only be happy as their reliance upon each other is reciprocal, and as they concur in their endeavours to supply those wants and remove those imperfections which are naturally attendant upon humanity. To beings, then, who are thus indispensable to each other, what virtue can be more invaluable than gratitude? It promotes confidence, by shewing that it is not abused; encourages benevolence and liberality, by proving that they are not undeserved; and tends to direct the general attention from selfish and contracted pursuits.

No mental affection has had more the evidence of universal consent to evince its excellency than gratitude. All men acknowledge it to be, in the highest degree, ornamental to the character of rational creatures; and the experience of all ages and nations has demonstrated that it is equally necessary to their welfare. Were evil ever to be the reward of good, we must quickly bid adieu to a community in which
the

the grand bond of social contact was dissolved, and must have recourse to the caves of the earth for refuge from the greatest of enemies, our own species.

Those crimes which are destructive of public happiness are ever found equally so to private interest. This is the case with ingratitude. Like all other vices, it generally defeats its own purposes of advantage, and terminates only by entailing the reproaches of conscience upon its perpetrators. When the ambitious Sir Francis Bacon attempted, with a degree of baseness so entirely unworthy of his character, to perpetuate the disgrace of Essex, a man who had formerly been his warmest friend and patron, what did he gain by a conduct so odious? The chagrin of disappointment, and the detestation of mankind.

There appears to be an innate principle, of which few are destitute, that intuitively forbids us to behave with unkindness towards those from whom we have received obligations. Were we, therefore, to consult those unerring monitors of reason and virtue, our own feelings, we should find, that to be ungrateful was to do violence to nature.

We are not, however, to suppose that all benefits are entitled to a lasting acknowledgment. He who, in the act of befriending another, seeks an opportunity to display his own superiority; he who makes policy, or ostentation, the principal incentive to his liberality, can neither deserve, nor will experience a fervent return. True "gratitude is a sense of obligation, combined with esteem, for the benevolence or generosity with which we have been relieved or assisted."* It is a sentiment of the most exalted nature; it proceeds from a noble elevation of soul; and only actions truly disinterested are capable of exciting it in the mind.

History might furnish us with numerous instances of the most exemplary exercise of this virtue. All the good and wise amongst the ancients strenuously endeavoured, both by precept and example, to impress its excellence and enforce its practice upon the heathen world. Indeed, in the celebrated orators of antiquity, whose breasts were ennobled by almost every attribute that can claim admiration; it would

* Williams's Lectures on Education.

be unnatural to seek for a depravity which can only exist in the minds of the sordid and unprincipled.

The grateful behaviour of Philip, king of Macedon, towards Aristotle, may, perhaps, serve to illustrate the amiableness of this quality. Conscious of his felicity in being able to obtain that philosopher as a tutor to his son, he not only rewarded his care by pecuniary munificence, but even rebuilt Stagira, which he had destroyed, reinstated its scattered inhabitants, and allowed them several valuable privileges, as a testimony of his regard for Aristotle, to whom this city had the honour of giving birth. Alexander also, on his part, evinced the most affectionate esteem for his illustrious preceptor, loving him as a parent, whilst he revered him as a sage. This conduct in the young monarch demands the most liberal approbation. It reflects far greater credit on his understanding and his heart, than all those famed conquests by which he afterwards spread desolation throughout the earth, and deluged the world in blood.

Considered, then, in a moral light, gratitude appears to deserve our highest encomiums, and to solicit our most diligent cultivation. In the estimation of our Maker, however, its exercise is regarded as no less laudable. It, in reality, seems to be the grand foundation upon which the whole superstructure of both natural and revealed religion is established; for were thankfulness to be entirely extirpated from the mind, with it we should, perhaps, at the same time, banish every latent seed of those virtues which Christianity inculcates, or the dictates of reason command us to cherish.

The most superficial examination of the nature and spirit of the doctrine we profess, will be sufficient to assure us of the excellency of gratitude as a Christian principle. Is the forgiveness of our enemies, in the estimation of the Almighty, a virtue of so great importance, that upon its performance we are alone to repose our own hopes of pardon; and shall a grateful heart be deemed an offering unworthy of the divine approbation? Surely, if the returning of evil for evil be considered as a crime in the sight of God, it would be unreasonable to suppose that he shall be regarded

as innocent, who can recompense beneficence with aversion or neglect!

As a duty of revelation, the exercise of gratitude ought doubtless to be first devoted to our Creator. For, if not to that Power through whom "we live, and move, and have our being;" if not to him at whose hand we receive all the blessings which we now enjoy, and in whom are all our hopes of happiness hereafter, to what benefactor can the tribute of our thankfulness be due? A proper sense of the obligations which we owe to our Maker is, indeed, the original source of almost every other Christian virtue. This it is by which we are led to hold sacred the laws of God, and this it is by which we are disposed to behave with charity towards man.

Judas, the traitor, is a melancholy instance of the want of gratitude in one who ought to have been particularly sensible of its excellence. How detestable does his conduct appear, when contrasted with that of the other apostles. Like them he had the most indisputable testimonies of the godhead of his Redeemer. Like them he had witnessed his miracles and heard his divine instructions. But covetousness, that greatest bane to every thing noble, was his ruin. May his example serve as a beacon to all succeeding Christians! Whilst it teaches them to dread the imitation of his treachery and infidelity, may it root in their minds an abhorrence of ingratitude!

Thus, then, gratitude appears to be not only highly honourable to the nature of man, as a rational creature, but likewise equally so to his fidelity as a servant of God; not only absolutely necessary to his comfort in his present state of being, but also equally requisite to his happiness in a future existence. Let, then, a conviction of its moral and christian excellency serve as an inducement to its universal practice. In particular, however, let not those who enjoy the light of revelation be found deficient in a virtue which even the most savage horde of barbarians must esteem as indispensable to their political welfare, and which the most unenlightened of their tribe would, by the voice of reason and the dictates of his own feelings, consider himself as compelled to possess.

I declare

I declare that the above is my own, sole, and unaided production, and that I do not complete my sixteenth year until the 11th day of this month.

As my last composition, I think it incumbent upon me to add, (in conformity with the principle which I have here humbly endeavoured to illustrate) that I shall ever remember, with sincere gratitude, the favours so repeatedly conferred upon me by the Conductors of the Monthly Preceptor.

Whittlesea, April 1, 1801.

WILLIAM AINGER.

Attestation.

The above farewell essay I solemnly declare to be (to the best of my knowledge) the totally unassisted production of my pupil, W. Ainger; neither by explanation, suggestion, correction, nor in any way, directly or indirectly, have I interfered. It is the sole result of his own persevering diligence and laudable emulation.

Whittlesea, April 1, 1801.

GEORGE BURGESS.

ODE TO GRATITUDE.

By Master H. KIRKE WHITE, not 16.

STROPHE.

HAIL noblest impulse of the human breast!

That with unceasing ardour moves the mind,

To self-despising deeds which all attest,

A power all moving, vast, and unconfin'd.

Hail, holy Gratitude! thy deep-ton'd notes,

Tun'd to the song of praise, ascend the sky,

And as the glorious emblem upwards floats,

The quiv'ring tear bedims thy dewy eye,

And thy full heart upheaves th' extatic sigh.

ANTISTROPHE.

Thy pow'r presid'd, with thy ardour blest,

Teaching his soul to feel the rushing glow,

When gen'rous Lilla interpos'd his breast,

To shield his master from th' assassin's blow.*

* Vide Hist. England during Saxon Heptarchy.

By

By thee inspired the famish'd lion fawn'd,
 Joyous beneath his trembling, destin'd prey,
 Calm'd his fell fury, and no longer burn'd,
 To quench in blood his thirst, but prostrate lay,
 And lick'd his feet in inoffensive play.*

EPODE.

Hail, then, all hail! thou lovely mild-ey'd maid,
 Before whose shrine the brute and savage bend,
 Whose voice respondent's heard in every glade,
 Whose lays from every warbler's throat ascend.
 Continue thou with energetic fire,
 T' illumine this bosom, and possess this heart:
 Continue still thy gen'rous warmth t' inspire,
 And thy enthusiasm to my soul impart.
 And may this hand forget its wonted use,
 And life's soft pulses cease to vibrate here,
 When friendship's soothing hand cease to produce,
 Thy short, quick throb—thy fluttering, flattering tear.

Gentlemen,

I beg leave to return you my most grateful acknowledgments for the honour you have done me, in awarding me your first prize, which was the more gratifying, as it qualified me to appear in that contest wherein even to be vanquished will be honourable.

The ode which you herewith receive, I most solemnly declare to be my own, sole, and unaided production, and also that I am not 16 years of age.

I am, Gentlemen,

Your obliged humble servant,

HENRY KIRKE WHITE.

Attestation.

I solemnly declare, to the best of my knowledge, that Henry Kirke White, aged 15, has not received any assistance in the above ode, either by explanation, suggestion, correction, or in any way directly or indirectly.

HANNAH SMITH, his sister.

*Ladies Boarding-school, High Pavement,**Nottingham, April 3, 1801.*

* Vide A. Gellius.

PRIZE

PRIZE TRANSLATION,

From Masillon's Sermons.

By Miss ANNE PARKEN, aged 13.

I CONFINE myself to you, my brethren, who are assembled here; I speak no longer of the rest of mankind; I look upon you as if you were alone upon the earth: this is the idea which now engages, and terrifies me. I suppose that this is your last hour, and the end of the world, that the heavens open, and Jesus Christ appears, surrounded with glory in the midst of this temple, and that you are assembled here, like trembling criminals, expecting a gracious pardon, or a condemnation of eternal death: for it is vain to flatter yourselves; you will die like what you are to-day. All these hopes of change which amuse you now, will continue to amuse you till your death-bed undeceives you; the experience of all ages declares it. The only difference you will then find, will be, perhaps, a more awful account than you would have to render to-day; and from the situation in which you would be, were you to receive sentence this moment, you can almost determine what it will be at the close of life.

Now I ask you, and I ask you struck with terror, connecting my own fate with yours, and putting myself in the same temper of mind in which I wish you should be; I ask you then, if Jesus Christ appeared in this assembly, the grandest in the world, to pronounce judgment upon us, and to make the awful distinction between the sheep and the goats; do you suppose that the greatest number of those who are present would be placed at his right hand? Do you suppose that it would be at least equal? Do you believe that there would be even ten just persons found in this assembly, when the Lord could not find that number formerly in five whole cities? I ask you; but you are ignorant, and I am also. Thou alone, O God, knowest who are thine. My brethren, our fate is almost determined, and we are yet careless of it. And, even at this terrible partition which will one day take place, should there be but one sinner

from this assembly rejected, and a voice from heaven should now assure us of it without declaring whom; who is there among us but would dread, lest he should be the unhappy wretch? Who among us would not instantly examine his conscience, to discover if his crimes have not deserved this punishment? Who among us would not be seized with fear, and enquire (like the Apostles of old of Jesus Christ,) Lord is it I? Are we wise, my dear hearers? Perhaps amongst all those who are now present, there will not be found ten righteous men; perhaps still less. O God, I know not, I dare not penetrate the abyss of thy judgments; there may be but one; and this danger does not affect you, my dear hearer? You believe yourself to be this single happy man amongst the great number who will perish; you who have, perhaps, less reason than any other: you upon whom alone the sentence of death ought to fall. Great God! how little do we know of the terrors of thy law, in this world.

But what conclusion ought we to form from these awful truths? Ought we utterly to despair of salvation? No, thanks be to God, the impious man only, to appease his unquiet mind, endeavours to conclude from hence that all men will perish like himself; this discourse is not intended to produce such an opinion. But to undeceive you with respect to this universal error, that we may live like the rest of mankind, and that the road of custom ensures safety: to convince you that if you would save yourselves, you must distinguish yourselves from others; be singular, live apart from the rest of the world, and seek not to imitate the multitude.

I declare that the above translation is my own, sole, and unaided production, and that I am not more than 13 years and four months of age.

ANNE PARKEN.

Attestation.

I believe the above declaration to be perfectly true.

March 27, 1801.

DAN. PARKEN.

GENERAL

GENERAL ADJUDICATION OF THE PRIZES

GIVEN WITH THE FIFTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

"To prove by argument and example the excellency of Gratitude as a moral and christian virtue."

The first prize has been awarded to Master W. AINGER, of Whittlesea, not 16. Attested by the Rev. W. Burges.

To receive Books, value Two Guineas.

The second to Miss ISABELLA ORMSTON, of Newcastle-upon-Tyne, aged 14. Attested by her mother.

To receive a Silver Medal, value Half-a-guinea.

The third to Master MAJOR AINGER, of Whittlesea, aged not 15. Attested by the Rev. Mr. Burges.

To receive Dr. Gregory's Elements of a Polite Education.

The fourth to Master THOMAS RIDLEY, of the seminary at Greta Bridge, Yorkshire, aged 14. Attested by Mr. Newby.

To receive Irvine's Elements of English Composition.

The fifth to Miss MARIA WILLIAMS, of Mrs. Bearcroft's seminary, Worcester, aged 15 years and a half. Attested by Mrs. Bearcroft.

To receive Irvine's Elements of English Composition.

The sixth to Master HENRY TAYLOR, of Palgrave School, aged 13 years and a half. Attested by the Rev. Mr. Tremlett, head master.

To receive Dr. Mavor's Natural History.

The seventh to Master F. H. BROWNE, of Birche's-green academy, near Birmingham, aged 15. Attested by the Rev. Mr. Corrie, head master.

To receive Dr. Gregory's Polite Education.

The eighth to Master W. BEDDOME, of Messrs. Palmer's school, Hackney, aged not 13. Attested by Mr. Palmer.

To receive Dr. Mavor's British Nepos.

The ninth to Master HENRY LUCAS, of Gosport Academy, aged

aged 13 years and three months. Attested by Mr. Cumyns, chifical assistant.

To receive Allen's History of England.

The tenth to Master JAMES SIDNEY, of the Rev. Mr. Crole's academy, Islington, aged 15. Attested by Mr. Crole.

To receive Irvine's Elements of English Composition.

Many of the following productions are little inferior to those of the more fortunate candidates; and all of them are entitled to COMMENDATION.

Poetical essays have been received from Master WHITE and Master PELL.

Master J. Andrews, aged 14, of Olney, Bucks

Miss Maria Barr, aged 13, of Miss Robins's boarding-school, Worcester

Master George Barr, not 15, of Mr. Osborne's academy, Worcester

Master Henry Biden, aged 12, of Mr. Newby's academy, Barningham, near Greta Bridge, Yorkshire

Master J. R. Beddome, aged 14 years and two months, of Messrs. Palmer's academy, Hackney

Master W. R. Clayton, aged 14 and upwards, pupil of the Rev. Eusebius Lloyd, of Silchester

Miss Catherine Colbert, not 15, daughter of Mrs. Harriot Colbert, of Dublin

Master John Crowdare, aged 15 years and near 11 months, formerly of Mr. Rutherford's school, Lanchester, but now in the house of Messrs. J. and C. Newbold, Hull

Master J. Clarke, aged 13 years and 11 months, of the grammar-school, Barnard-Castle, Yorkshire

Master Joseph Conder, aged 11 years and seven months, of Messrs. Palmers' school, Hackney

Miss E. A. Chave, aged 15 years and two months, niece of Mrs. Henrietta Neale, of Luton

Miss E. Ryland Dent, not 13, of Mrs. Dent's boarding-school, Northampton

Master G. F. Dickson, not 14, of Messrs. Palmers' academy, Hackney

Master T. C. Edwards, aged 15, of the Rev. Mr. Paul's academy, Castle Cary, Somerset

Master G. Edwards, aged 14 years and 10 months, of the grammar-school, Barnard Castle

Master Henry Ewbank, aged 14 years and two months, of Gainsborough Grammar-school

Master John Finch, aged 15 years and nine months, of Englefield-house Academy, Egham, Surrey

Master Joseph Falowfield, aged 14 years and seven months, of the grammar-school, Barnard Castle

Master Thomas Gibson, aged 13 years and 11 months, of ditto

Master

- Master *M. A. Goldsmid*, aged 12 years and four months, pupil of Dr. Montucci
- Master *Henry Gee*, not 16, private pupil of the Rev. J. Stuart Mackenzie, of Thetford
- Miss *Joanna Gillam*, aged 14
- Master *T. H. Bell*, aged 14 years and six months, of the grammar-school, Barnard Castle
- Miss *Maria Hague*, aged 14 years and one month, daughter of Mr. Hague, Northampton
- Miss *Julia Hort*, aged 12, daughter of Mrs. Jane Hort, Vauxhall
- Miss *Hannah Harwood*, aged 15 years and two months, of Mrs. Dent's boarding-school, Northampton
- Master *Joseph Hobson*, under 16 years of age, of the grammar-school, Barnard Castle
- Master *D. Harvey*, aged 15 years and four months, of Messrs. Palmers' academy, Hackney
- Master *John Hird*, aged 14 years and seven months, of the grammar-school, Barnard Castle
- Master *John Inkerfole*, aged 14, of Messrs. Palmers' academy, Hackney
- Master *B. H. Jones*, not 14, of ditto
- Master *Richard Isbell*, aged 14, son of Mr. R. Isbell, of Stonehouse, Plymouth
- Miss *Sarah Kempson*, not 15, daughter of Mr. P. Kempson, of the Sand Pits, Birmingham
- Miss *Elizabeth Knight*, aged 16, daughter of Mrs. E. Knight, of Kingston-upon-Thames.
- Miss *A. E. Langford*, aged 14 years and eight months, daughter of Mr. Langford, of Moorfields
- Miss *A. Lewis*, not above 14.
- Miss *Eliza Martineau*, aged 14, of Mrs. Green's seminary, Upper Gower-street
- Miss *Margaret Mills*, aged 15 years and six months, daughter-in-law of Mr. B. Blake of Hans-place, Sloane-street
- Miss *Sarah Ann Neale*, aged 15, niece and pupil of Mrs. S. Hanwell, of Kentish-town
- Master *Richard Nanton*, aged 15 years and seven months, of Messrs. Palmers' school, Hackney
- Master *Francis Osbourne*, aged 15
- Miss *Catharine Osborn*, aged 12
- Master *Henry Okes*, aged 11 years and two months, of Mr. Newby's school, Barningham, near Greta Bridge, Yorkshire
- Master *John Price*, aged 13, of Messrs. Palmers' school, Hackney
- Master *S. Raban*, not 13, of Olney, Bucks
- Master *John Raban*, not 16, son of Mr. Raban, of ditto
- Miss *Jane Alice Smith*, aged 12, pupil to Mrs. Burges, of Whit-
tlesea
- Master *Thomas Smith*, aged 15, of Mr. Wright's school, Wisbeach
- Master *William Shingleton*, aged 16 years and one month
- Master *Henry Smith*, aged 15 years and two months, of Gainsborough Grammar-school

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- Master *John Stancumb*, aged 13 years and three-quarters, of Trow-bridge
 Master *Richard Steele*, aged 13 years and seven months, of the grammar school, Barnard Castle
 Master *John Smith*, not 14, of Gainsborough Grammar-school
 Miss *Caroline Thomas*
 Miss *Sophia Tongue*, aged 14 years and one month, of Mrs. Smallwood's boarding-school, Croom's-hill, Greenwich
 Master *George Turner*, aged 15, pupil at Mr. Robinson's seminary in Arundel street
 Master *George Watson*, aged 13 years and four months, of the grammar-school at Barnard Castle
 Miss *Mary Martha Woolley*, aged 14, of Mrs. Hanwell's school, Kentish-town
 Master *G. R. Cooper Wilcocke*, not 14, of Messrs. Palmers' school, Hackney
 Miss *Charlotte Anne Waldie*, aged 12 years and seven months, of Newcastle-upon-Tyne
 Master *William Thorpe*, aged 12 years and seven months, of Mr. Burgess's academy, Whittlesea
 Master *William Wood*, aged 14 years and seven months, of the grammar-school, Barnard Castle
 Master *W. H. Wilkinson*, aged 15 years and six months, of Gainsborough Grammar-school
 Miss *Sarah Ingram Wood*, aged 13, of Mrs. Harris's school, North-hill, Colchester
 Miss *Elizabeth Wood*, aged 11 years and eight months, of Barnard Castle

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND SUBJECT.

TRANSLATION FROM THE FRENCH.

TRANSLATION FROM MASILLON.

The first prize has been awarded to Miss ANNE PARKEN, of Dunstable, aged 13 years and four months. Attested by her father.

To receive a Cabinet Library, value two guineas.

The second to Miss LLOYD, of Great Missenden, aged 11 years and a half. Attested by her mother and Mrs. Krake, governess.

To receive a silver medal, value half-a-guinea.

The third to Miss HEN. EYRE, of Reading, aged 12. Attested by Mr. Loriot, her French master.

To receive Dr. Mavor's British Nepos.

The fourth to Miss ALICIA CATH. MANT, of Southampton,

ampton, aged twelve years and a half. Attested by Mrs. Barnoin, governess.

To receive Dr. Mavor's Plutarch.

The fifth to Master JOHN WARDELL, of Thorp-Arch Seminary, aged 13. Attested by the Rev. Mr. Peers, rector.

To receive Irvine's Elements of English Composition.

The sixth to Master HENRY JONES, of Barningham School, aged under 14. Attested by Mr. Angot, French teacher.

To receive Dr. Gregory's Elements of a Polite Education.

The seventh to Master NATHANIEL FENN, of Messrs. Palmers' school, Hackney, aged 13. Attested by Mr. Palmer.

To receive Goldsmith's History of England.

The eighth to Miss MARIA HAGUE, of Northampton, not 14. Attested by her mother.

To receive Irvine's Elements of English Composition.

The following are deserving of particular COMMENDATION:

Master Benjamin Ainslie, not 14, of the Rev. J. Bicheno's academy, Newbury, Berks

Miss Susannah Allen, not 13, of Mr. Proctor's academy, Doncaster

Master James Adams, aged 13 years and four months, of Mr. Dufresny's school, Stonehouse, near Plymouth

Miss Catharine Annabell Bishop, aged nine years and three months, youngest daughter of Sir Cecil Bishop, Baker-st. Portman-sq.

Miss Burn, aged 13 years and two months, at the school of Mesdames Dupont and Aublay, Birmingham

Master Arthur Burrow, aged 13 years and nine months, of Mr. Vivier's school, Warrington

Miss Sarah Berry, aged 13 years and two months

Miss Isabella Budd, aged 13 years and seven months, of Richmond-green, Surrey

Master John Barling, not 14, of the Rev. J. Bicheno's academy, Newbury, Berks

Miss Eliza Barnard, aged 12 years and eight months

Master Henry Biden, not 13, of Mr. Newby's academy, Barningham, near Greta Bridge, Yorkshire

Miss Button, aged 12 years and nine months, of Mesdames Dupont and Aublay's school, Birmingham

Master W. Keyworth Baker, not 13, of Attercliff

Master J. B. Briggs, not 14, of the seminary at Thorp-Arch

Master W. Stopford Colbert, aged 12, of Dublin

Miss Eliza Cox, aged 12 years and three months

Master C. Copland, of Mr. Buck's academy, East Dereham, Norfolk

Master Abraham Chatterton, not 14, of Middleton School

Master William Clarke, aged 12 years and a half, of the seminary at Thorp-Arch

Master

Master *G. F. Dickson*, not 14, of Mess. Palmers' academy, Hackney
 Master *Joseph Ewens*, aged 13 years and nine months, of the Rev.

Mr. Paul's academy, Castle Cary, Somerset

Miss *H. Fenton*, aged 13, of Godliman-street, Doctors' Commons

Miss *M. Gell*, not 13, of Mrs. Gell's boarding-school, Lewes, Sussex

Miss *S. C. Gore*, aged 11 years and four months, of Bath

Master *J. Gregory*, aged 12 years and seven months, of Messrs.
 Palmer's school, Hackney

Master *H. Green*, aged 13, of the seminary at Thorp-Arch

Master *W. A. Hargreaves*, aged 13, of ditto

Master *T. B. Haywood*, aged 11 years and a half, of Messrs. Hay-
 wood and Bolton's academy, Attercliff, near Sheffield

Miss *Mary Hampson*, not 13, of Luton, Bedfordshire

Miss *Ann Hawkins*, under 13 years and a half, of Norwich

Miss *Eliza Hardcastle*, aged 12 years and four months.

Master *S. Hind*, not 13, of Mr. Fieldsend's school, Attercliff

Miss *Mary Howell*, aged 13, No. 226, Upper Thames-street

Master *Richard Isbell*, aged 14, of Stonehouse, near Plymouth

Master *P. B. Jeckell*, age 12 years and two months, of Norwich

Master *B. H. Jones*, not 14, of Mess. Palmers' academy, Hackney

Miss *Mary Ann Lacock*, aged 12, of Miss Ramsden and Miss Wart-
 naby's school, Hinckley

Master *Henry Lucas*, aged 13 years and three months, of Mr. Bur-
 ney's academy, Gosport

Master *T. Lea*, aged 12 years and nine months, of Birmingham

Miss *Mary Ncedham*, aged 11 years and four months, of Misses
 Brown and Stokes' boarding-school, Peckham, Surrey

Miss *J. H. Neale*, aged 12, of Kentish town

Miss *C. Park*, aged 12 last August, of High street, Marybone

Master *D. Peacock*, aged 11, of Mr. Williams's academy, York

Master *G. C. Paynter*, not 14, of the academy at Gosport

Miss *Ann Robotham*, aged 13, of Kentish town

Master *C. J. Rayner*, aged 13 years and a half, of Birmingham

Master *J. Sudlow*, above 13, of the Grammar-school at Rippon

Miss *Sarah Stokworthy*, aged 11 years and four months, No. 18,
 Kirby street, Hatton-garden

Master *J. Surgey*, above 12, of Mess. Palmers' academy, Hackney

Miss *E. Steele*, aged 13 years and eight months, of Barnard Castle

Miss *C. Shepherd*, aged 11 last August, of Newbury, Berks

Miss *Francess Stephens*, not 14, daughter of Col. S. of the Royal Ar-
 tillery, Plymouth Dock.

Miss *A. Smith*, aged 11, of Mrs. Kitching's school, Stockton

Miss *Eliz. Smith*, not 13, of ditto

Miss *M. Simonds*, aged 12, of Reading School

Master *J. Smith*, not 14, of the grammar school at Gainsborough

Master *R. Steele*, aged 13 years and six months, of Barnard Castle

Miss *Torpson*, aged 13 years and two months

Miss *Eliza Tunno*

Miss *Anne Vowell*, aged 12, of New King-street, Bath

Miss *Sarah Wilds*, aged 13, of Fryar's-walk Boarding-school

Miss *Ann Weller*, aged 12, a pupil in Mrs. Gell's school, Lewes

Miss

Miss *Maria Walker*, aged 13 years and nine months
 Miss *Ann Ward*, not 13, of Mrs. Burnouin's school, Southampton
 Master *G. R. C. Wilcocke*, not 14, of Mess. Palmers' academy, Hacc.
 Master *R. A. Waugh*, aged 13, of Palgrave School
 Master *G. White*, aged 11 y. and 4 m. of Mr. Shield's ac. Hampstead
 Miss *M. B. Webster*, not 10, of Mrs. Kitching's school, Stockton
 Master *W. Wybergh*, aged 13 years and a half, of Thorp-Arch sem.

CLASS III.

ADJUDICATION OF THE PRIZES ON THE MAPS

Of the Country adjoining to the Candidates Residence.

We have with great pleasure beheld the attempts of the candidates for these prizes, of which the three first are marked by peculiar elegance, and from the encouragement given to exercises of this kind in schools in the country, we may presume that the art of mapping estates will hereafter be considerably improved.

The first prize is assigned to Master JOSEPH BENNETT, aged 14 years and a quarter. Attested by Mr. Blanchard, for his plan of the vicinity of Nottingham Academy for two miles round.

To receive an achromatic telescope, value 3l. 13s. 6d.

The second prize is assigned to Master WILLIAM BENNETT, of Nottingham Academy, aged 12. Attested also by Mr. Blanchard, for the plan of the vicinity of his paternal residence, near Papplewick.

To receive a case of mathematical instruments, v. 1l. 1s.

The third prize is assigned to Master EDMUND CROCKER, under 16, of Frome School, in Somersetshire, for his map of Frome and its vicinity. Attested by Mr. Crocker.

To receive Dr. Mavor's Natural History.

The fourth prize is assigned to Master J. B. WATSON, aged 13, for his map of the vicinity of Hilditch's Academy, Tamworth, Staffordshire. Attested by Mr. Hilditch.

To receive Dr. Mavor's Lives of Plutarch abridged.

The fifth prize is assigned to Master W. BINGLEY, under 15, of Doncaster Academy, for his plan of the environs of Doncaster. Attested by Mr. Falconar.

To receive Dr. Gregory's Polite Education.

The sixth prize is assigned to Master THOMAS RIDLEY, of Mr. Newby's academy, Barningham, Yorkshire, aged 14, for his map of the environs of Barningham. Attested by Mr. Newby.

To receive Dr. Mavor's Natural History.

Masters *G. Nicholson* and *Matthew Proctor*, of Forth-house, Newcastle-upon-Tyne; and Masters *R. Philpott* and *Henry Okes*, of Mr. Newby's academy; Masters *R. Bird* and *J. Bayne*, of Hilditch's academy; and Master *Lewis*, of Westminster, have all shewn in their efforts a degree of skill which, by exercise and attention, will hereafter insure them success.

NEW PRIZE SUBJECTS FOR No. XVII.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of June.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SEVENTEENTH YEAR.

A critical examination of No. 465 of the Spectator, in the manner of the Letter from a Father to his Son.

The best examination to entitle the writer to Books, value three guineas; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS II.

TRANSLATION FROM THE ITALIAN.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR FIFTEENTH YEAR.

VITA DI MADAMA DACIER.

Anna Dacier, Figlia di Tranquillo Fabbro, Professore di Greco in Saumur, ed una delle più letterate persone del suo Secolo, sino da' primi anni mostrò un talento acconcio alle Scienze, che suo padre seppe coltivare con piacere, e sollecitudine. Dopo la morte di sua padre ella andò a Parigi, dove il suo grido l'avea di già fatta conoscere. Preparava in quel tempo l'edizione di Callimaco, che pubblicò nel 1674. Avendo fatta vedere qualche cosa a Mr. Uezio, e ad altri Scienziati della Corte, fu talmente ammirata la sua Opera, che il Duca di Montausier la fece pregare a dar al pubblico diversi Autori Latini, all' uso del Delfino. Se ne scusò ella immediatamente; ma il Duca, sendosi portato a visitarla, l'obbligò ad acconsentirvi, ed intraprese l'edizione di Floro, che comparve alla luce nel 1674. Il suo nome essendosi sparso in tutte le parti d'Europa, la Regina Cristina di Svezia, la fece complimentare dal Conte di Conygmarsk. La figlia di Tranquillo mandò allora a questa Principessa, accompagnata da una lettera latina, l'edizione di Floro. S. M. le rispose obbligantemente, e dopo qualche tempo le scrisse altra lettera per impegnarla ad abbandonare la religion protestante, ed in oltre le fece considerevoli offerte per ridurla alla sua Corte. Madamigella Fabbri sposò Mr. Dacier nel 1683, ed immediatamente manifestò al Duca di Montausier il pensiero, che da qualche tempo avea di rientrare nella Chiesa Romana. Ma Mr. Dacier non essendo ancora convinto della necessità di un tal cambiamento, si ritirò con la moglie a Castres nel 1684. pe. esaminare i punti controversi tra i Protestanti, ed i Cattolici. Dopo un maturo esame si determinarono in favore degli ultimi, e fecero la loro abjura pubblica nel 1685. Luigi XIV. informato del loro merito, diede in seguito ad entrambi efficaci prove della sua stima. Ebbero un figlio, e due figlie. Il Figlio, ch' era di grandi aspettazioni, morì nel 1694; L'una delle figlie si fece Religiosa nell' Abbazia di Longchamp: L'altra

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L'altra, ch' era un perfetto modello delle migliori virtù, e prerogative, che possono adornare il suo sesso, morì nell' età di 18 anni. Madama Dacier menò in una grande infirmità gli ultimi due anni della sua vita, e finì di vivere nel 17. Agosto del 1720, nel età di 69 anni dopo essere acquistata l'universale stima, non solo per lo sapere, e per l'elevazione del suo ingegno, ma ancor più per lo suo valore, la sua costanza, la sua egualianza, e generosità d' animo. Le sue principali Opere sono: 1. un' eccellente traduzione, con varj Commenti sopra Terenzio, di cui la miglior edizione è quella d'Olanda: 2. una traduzione dell' Iliade, ed Odissea d'Omero, con delle note: 3. una traduzione d' Anacreonte, di una parte di Plauto, e di Aristofane; aveva pure fatti varj riflessi sopra la Sacra Scrittura, i quali fu più volte sollecitate di dare al pubblico; ma ella rispose sempre, *che una Femmina deve leggere, e meditare la scrittura per regolare la sua condotta in ordine a ciò, ch' ella insegna, ma che deve altresì osservare il silenzio, giusta il precetto di S. Paolo.*

The best translation to be entitled to a Cabinet Library, value two guineas; the seven next best to books, value five shillings each.

CLASS III.
ARITHMETICAL QUESTION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

An engineer, employed in superintending the cutting of a canal, found that 70 men cut through a 100 yards of land, six feet in depth, and 25 feet wide, in 18 days; and it being expedient that another piece of land, 300 yards long and 30 feet in width, should be cut through in 10 days to the depth of seven feet, he sent thither these 70 men, and as many other men as were necessary for the task. Now these other men were the better workmen, for 80 of them would do as much in two days as the 70 in three; but the new piece of land was much easier to be cut through than the former piece, as the 70 men could in four days cut through as much of the new as they had done in five days of the old piece. It is required to determine the number of men employed in the new job, and the quantity of land cut through by the 70 men, and by the men in addition to them; and also to give the reasons for each operation.

The best answer will be entitled to a prize, value two guineas; and the seven next best to prizes value five shillings each.

NEW PRIZE SUBJECTS FOR No. XVIII.

To be sent in on or before the 5th of July.

CLASS I.

ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

Subject proposed by Master W. Beddome, of Mess. Palmer's School, Hackney.

To prove by argument and example the advantages of early piety.

CLASS II.

TRANSLATION FROM THE LATIN.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

Adnotasse videor, facta dictaque virorum feminarumque illustrium alia clariora esse, alia majora. Confirmata est opinio mea hesterno Fannæ sermone. Neptis hæc Arriæ illius, quæ marito & solatium mortis & exemplum fuit. Multo referebat aviæ suæ non minora hoc, sed obscuriora: quæ tibi existimo tam mirabilia legenti fore, quam mihi audienti fuerunt. Ægrotabat Cæcinna Pætus, maritus ejus, ægrotabat & filius, uterque mortifere, ut videbatur: filius decessit, eximia pulchritudine, pari verecundia, & parentibus non minus ob alia carus quam quod filius erat. Huic illa ita funus paravit, ita duxit exequias, ut ignoraret maritus. Quinimmo quoties cubiculum ejus intraret, vivere filium atque etiam commodiorem esse simulabat. Ac per sæpe interroganti quid ageret puer, respondebat Bene quievit, libenter cibum sumpsit. Deinde quum diu cohibitz lacrymæ vincerent prorumperentque, egrediebatur. Tunc se dolori dabat. Satiata, siccis oculis, composito vultu redibat tanquam orbitatem foris reliquisset. Præclarum quidem illud ejusdem, ferrum stringere, perfodere pectus, extrahere pugionem, porrigere marito, addere vocem immortalis ac pene divinam, *Pæto, non dolet*. Sed tamen ista facienti dicentique gloria & æternitas ante oculos erant: quo majus est sine præmio æternitatis, sine præmio gloriæ abdere lacrymas, operire luctum, amissoque filio matrem adhuc agere. Scribonianus arma in Illyrico contra Claudium moverat: fuerat Pætus in partibus, & occiso Scriboniano, Romam trahebatur. Erat ascensurus navem, Arria milites orabat ut simul imponeretur. Nempe enim (inquit) daturi estis consulari viro servulos aliquos, quorum e manu cibum capiat, a quibus vestiatur, a quibus calcietur: omnia vel solo præstabo. Non impetravit. Conduxit piscateriam naviculam, ingensque navigium ininimo secuta est. Eadem apud Claudium uxori Scriboniani, quum illa profiteretur indicium, Ego (inquit) te audiam cujus in gremio Scribonianus occisus est, & vivis? Ex quo manifestum est, ei concilium pulcherrimæ mortis non subitum fuisse. Quinetiam quum Thrasea gener ejus deprecaretur ne mori pergeret, interque alia dixisset, Tu vis ergo filiam tuam, si mihi per eundem fuerit mori mecum? respondit, Si tam diu tantaque concordia, vixit tecum, quam ego cum Pæto, volo. Auxerat hoc responso curam suorum. Attentius custodiebatur: sensit, & Nihil agitis, inquit. Potestis enim efficere ut male moriar; ne moriar, non potestis. Dum hæc dicit, exiit cathedra, adverteoque pareiti caput ingenti impetu impexit, & corruit. Refocilla ait Dixeram (inquit) vobis, inventuram me quamlibet duram ad mortem viam, si vos facilius negassetis. Videturne hæc tibi majora illis *Pæto non dolet*, ad quod per hæc perventum est? quum interim illud quidem ingens fama: hæc, nulla circumfert. Unde colligitur quod initio dixi, alia esse clariora, alia majora. Vale.

JUVENILE ENCYCLOPEDIA.

LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XVI.

OF COLOURS.

I HAVE explained to you the nature of vision, and that it is by means of the rays of light which are sent from the different objects that surround you to your eyes, that they are rendered visible. But you are yet at a loss to understand whence proceed the infinite variety of colours in which the whole creation is superbly arrayed. You must be rendered sensible of these colours by means of the light, but you will be surprized to learn that the colours are not in the things, but in the light itself; and that every beam or pencil of light is composed of particles of different colours. "The blushing beauties of the rose, the modest blue of the violet," says Goldsmith, "are not in the flowers themselves, but in the light that adorns them: odour, softness, and beauty of figure are their own; but it is light alone that dresses them up in those robes which shame the monarch's glory."

You must have observed yourselves, that the colours of objects are essentially altered by the light in which they are seen. Various dyes of silk or woollen stuff are not the same by day as by candle light; but there is a common experiment which will yet more forcibly illustrate what I have been observing, and prove that colour is not in the objects, but in the light by which they are seen. Let a pint of common spirit, the cheapest will answer as well as the best, British brandy for instance, be poured into a soup-dish, and

then set on fire: as it begins to blaze, let the spectators stand round the table, and let one of them throw an handful of salt into the burning spirit, still keeping it stirring with a spoon. Let several handfuls of salt be thus successively thrown in; the spectators will see each other frightfully changed, their colours being altered into a ghastly blackness. It is plain, then, that the solar rays are composed of matter different from the light, which is emitted by this flame; and the truth is, that the light of a candle is somewhat different from both.

But the genius of Newton has enabled us to go still further in ascertaining the nature of light. He has analyzed it with as much expertness as a chemist analyzes any physical substance, and has divided it into its component parts. To this noble discovery the great philosopher was led rather by accident than by design; but a mind such as Newton's was able to improve whatever hint chance submitted to his view. It was in attempting to rectify the errors arising from the refraction of light by the glasses of the telescope, that his attention was directed to the wonderful effect which is produced by a prism.

The prism of the opticians is a triangular piece of glass, of the length of about three inches. If, then, a small hole F, fig. 1, (see the plate in our last number) is made in the window-shutter, EG, of a dark chamber, and a beam of light, SF, proceeding directly from the sun (for the experiment will only succeed when the sun shines) is made to pass through the prism, ABC, an image of the sun, PT. will be represented on the sheet of paper, MN, fixed to the opposite wall. But you will observe two very extraordinary circumstances attending this representation of the sun. The first, that the figure is not round but oblong; and, secondly, if you will observe the figure in the plate, you will see that it is intended to represent different colours, and in the real image these colours will be found extremely vivid. On measuring the image, which philosophers have agreed to call a *spectrum*, Sir Isaac Newton found that, at the distance of eighteen and a half feet from the prism, the breadth of the image was two inches and a half, and its length ten inches and one quarter, that

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is, nearly five times its breadth. The sides were right lines distinctly bounded, and the ends were semicircular, as in the plate. From this it was evident that it was still the image of the sun, but elongated by some refractive power in the glass. In the image PT the colours succeeded in this order from the bottom at T, to the top at P, namely red, orange, yellow, green, blue, indigo, violet.

Unable as yet to account for the phenomenon, he was induced to try the effect of two prisms, and he found that the light, which by the first prism was diffused into an oblong, was by the second reduced to a circular form, as regularly as if it had passed through neither of them. After various conjectures and experiments he had recourse, at length, to what he calls the *experimentum crucis*. At the distance of about twelve feet from the prism, which was close to the aperture F, he placed a board which might receive the image in the same manner as the sheet of paper MN. In this board there was also a small hole, through which some of the light might pass; behind this hole, then, he placed a second prism, and, by moving the first prism, he made the several parts of the image cast by it on the board to pass successively through the hole, so as to be refracted again upon the wall by the second prism. He found then, that the different colours of the spectrum, when permitted to pass through the hole in the board, were incapable of farther decomposition; that the red rays continued red, the orange the same, &c. The cause of the phenomenon, therefore, was no longer a secret. It was plain that every beam of light consisted of particles different in colour, or which rather have the effect of producing different colours, and that all of them blended together formed white. It was further evident, that the particles of one colour were more refrangible than those of another; and therefore those which formed the upper part of the image or spectrum suffered a much greater refraction than those at the bottom; in other words, were more under the influence of the attractive powers of the glass. Hence it was further evident why the figure or spectrum was of an oblong form instead of round; for the particles of light being differently refrangible, were spread out longitudinally by the action of the prism.

Various experiments will easily convince you that white light is no more than a compound of these party-coloured rays or particles. For if, instead of the sheet of paper MN, you substitute the large convex glass D, see fig. 2, in its place, the scattered rays will be converged and united at W, where, if the paper is placed to receive them, you will see a circular spot of a lively white. At W also the rays will cross each other; and if the paper is removed a little further, you will see the prismatic colours again displayed as at RV, only in an inverted order, owing to the crossing of the rays.

To shew further in what manner *white* is produced. Let two circles be drawn, as in fig. 3, on a smooth round board ABCDEFG, and the outermost of them divided into three hundred and sixty equal parts or degrees: then draw seven right lines, as ⊕ A, ⊕ B, &c. from the center to the outermost circle; making the lines ⊕ A and ⊕ B include eighty degrees of that circle; the lines ⊕ B and ⊕ C forty degrees; ⊕ C and ⊕ D sixty; ⊕ D and ⊕ E sixty; ⊕ E and ⊕ F forty-eight; ⊕ F and ⊕ G twenty-seven; ⊕ G and ⊕ A forty-five. Then, between these two circles, paint the space AG red, inclining to orange near G; GF orange, inclining to yellow near F; FE yellow, inclining to green near E; ED green, inclining to blue near D; DC blue, inclining to indigo near C; CB indigo, inclining to violet near B; and BA violet, inclining to a soft red near A. This done, paint all that part of the board black which lies within the inner circle; and putting an axis through the center of the board, let it be turned very swiftly round that axis, so that the rays proceeding from the above colours may be all blended and mixed together in coming to the eye; and then the whole coloured part will appear like a white ring, a little greyish; not perfectly white, because no colours prepared by art are perfect.

Any of these colours, except red and violet, may be made by mixing together the two contiguous prismatic colours. Thus, yellow is made by mixing together a due proportion of orange and green; and green may be made by a mixture of yellow and blue.

The theory of colours is therefore now completely unfolded.

folded. Those bodies, or those parts of bodies, which have the property of reflecting only the red-making rays, will appear red; those which reflect the violet will be violet, &c.; and those which reflect some rays of one colour and some of another will be of the intermediate shade or colour between both; and as white is a compound of all the seven primary colours, so black is an entire deprivation of them all; and when an object appears black, the light is completely absorbed, or at least not reflected by it. To prove, however, still more forcibly that colour is not in the objects, but in the light itself; no object whatever can reflect any other kind of light than that which is thrown upon it; and when any one of the primitive rays has been separated from the rest, nothing can change its colour. Send it through another prism, expose it in the eye of a burning-glass, yet still its colour continues unaltered; the red ray will preserve its crimson, and the violet its purple beauty; whatever object falls under any of them soon gives up its own colour, though ever so vivid, to assume that of the prismatic ray. Place a thread of scarlet silk under the violet-making ray, the ray continues unaltered, but the silk instantly becomes purple. Place an object that is blue under a yellow ray, the object immediately assumes the radial colour. In short, no art can alter the colour of a separated ray; it gives its tint to every object, but will assume none from any; neither reflection, refraction, nor any other means can make it forego its natural hue; like gold, it may be tried by every experiment, but it will still come forth the same.

In whatever manner we consider the colour of a single prismatic ray, we shall have new cause to admire the beauties of nature. Whatever compositions of colouring we form, if examined with a microscope, they will appear a rude heap of different colours unequally mixed. If by joining, for instance, a blue with a yellow, we make the common green, it will appear to the naked eye moderately beautiful; but when we regard it with microscopic attention, it seems a confused mass of yellow and blue parts, each particle reflecting but one separate colour: but very different is the colour of a prismatic ray; no art can make one of equal

brightness, and the more closely we examine it the more simple it appears. To magnify the parts of this colour is but to increase its beauty.

The red and orange rays, you have seen, are least subject to refraction, or are least turned out of their way by the interposition of the glass; they are therefore, we may conclude, either larger than the rest, or propelled with greater force; in technical language, they have the greatest momentum. Agreeably to this we find, that when the eyes are very weak they can scarcely support a scarlet colour; its impressions are too powerful, and, next to the solar beam itself, dazzle and disturb the organ. On the contrary, the more refrangible the rays (the violet for instance) the less forcibly they strike the eye; and green, the intermediate colour, is the most agreeable, and is that in which Providence has chosen to array the meadows and the woods.

Of all the objects of nature the rainbow exhibits the prismatic colours in the greatest perfection. It is, indeed, a natural prism, and separates the component particles of light with the same accuracy and precision.

The rainbow was one of those phenomena which astonished and perplexed the ancients; and, after many absurd and unsuccessful conjectures, their best philosophers, Pliny and Plutarch, relinquished the inquiry as one which was above the reach of human investigation. In the year 1611 Antonio de Dominis made a considerable advance, however, to the true theory, by suspending a glass globe in the sun's light, when he found that, while he stood with his back to the sun, the colours of the rainbow were reflected to his eye in succession by the globe, as it was moved higher or lower. He was, however, unable to account for the production of the different colours, as the experiments with the prism had not yet been made, and it was reserved for Newton to perfect the discovery.

To begin, however, with the experiment of the former philosopher, let us suppose ourselves in his place. Let A, fig. 4, be a glass globe, and S*d* a ray from the sun, and falling on the globe at *d*; it will, in that place, suffer a refraction, and instead of going on to *c* will be bent to *n*. From *n* a part of the light will be reflected (for a part will necessarily

necessarily pass through), and falling obliquely at o , it will again be refracted. In this case you see that the globe, from its form, will act in some measure like a prism, and the ray will be separated into its component parts. An eye, therefore, situated at g , will see the red rays, at the line just above, the orange, &c. and so on to the violet. Now you will recollect, that in a shower of rain there are drops at all heights, and therefore the eye situated at g will see all the different colours.

This will account for the first or primary bow, which you see is thus formed by two refractions and one reflection; but there is generally a second bow on the outside of the other, which is rather fainter, and which is made by two refractions and two reflections. To explain this, take a similar glass globe, B, fig. 5. Let the ray T in that enter at the bottom of the globe at r , where it is refracted, and part of the light will escape at s , and the rest, instead of escaping to w , will be reflected to t ; from this, part will escape to x , and part will be again reflected to u , where it suffers another refraction, and is sent to the eye at g , where the violet rays will be first visible, and then the others in succession.

Now each drop of rain may be considered as a small globe, and within a certain range will refract and reflect the light in the manner above described. To make the matter still plainer, therefore, let us for the present imagine only three drops of rain, and three degrees of colours in the section of a bow (fig. 6). It is evident that the angle CFE is less than the angle BFE, and that the angle AFE is the greatest of the three. This largest angle then is formed by the red rays, the middle one consists of the green, and the smallest is the purple. All the drops of rain, therefore, that happen to be in a certain position to the eye of the spectator, will reflect the red rays, and form a band or semicircle of red; those again in a certain position will present a band of green, &c. If he alters his station, the spectator will still see a bow, though not the same bow as before; and if there are many spectators they will each see a different bow, though it appears to be the same.

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The phenomenon assumes a semicircular appearance, because it is only at certain angles that the refracted rays are visible to our eyes. The least refrangible, or red rays, make an angle of forty-two degrees two minutes, and the most refrangible or violet rays an angle of forty degrees seventeen minutes. Now if a line is drawn horizontally from the spectator's eye, it is evident that angles formed with this line, of a certain dimension in every direction, will produce a circle, as will be evident by only attaching a cord of a given length to a certain point, round which it may turn as round its axis, and in every point will describe an angle with the horizontal line of a certain and determinate extent.

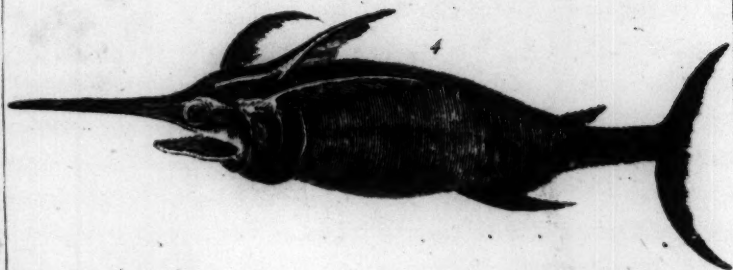
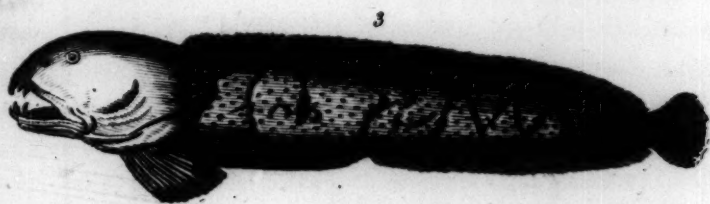
As the cause of colours must be now apparent to you, and as it is evident that they must proceed from some quality in bodies or their surfaces, which causes them to reflect rays of a particular hue, you will easily understand why some bodies, which are called semipellucid, afford one colour by transmitted, and another by reflected light. The truth is, the beam of light in passing through them is dissected and separated, and part of one colour is permitted to pass through, and part is sent back. If a solution of a wood called *lignum nephriticum* is put into a clear phial, when viewed only by the reflected light which falls upon it, the solution will appear blue; but if held up against the light, and seen through, the colour will be a fine yellow. The same is found to be the case with some precious stones, and some glass compositions. Thus if a small quantity of arsenic is mixed in the composition of glass, the mass will appear blue by the reflected light, but orange by that which is transmitted through it.

The blue colour of the sky may be accounted for upon this principle. The atmosphere may be considered as a semipellucid medium, which is loaded with small and light particles of vapour; and these particles may be compared with the particles of arsenic, which are mingled in the glass above mentioned. If the air is very heavily charged with these vapours, therefore, a large proportion of the light will be reflected, and that dusky whiteness appears which distinguishes mists and fogs; but in a clear state of the atmosphere

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Natural History,



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phere only the weaker and more refrangible rays, such as the blue, violet, &c. are reflected, and hence proceeds the blue colour of the sky.

On the same principles depends the green colour of the sea. It is a muddy mass, charged with heterogeneous particles. All the more refrangible rays, therefore, are reflected, while the stronger rays, the red, orange, &c. are transmitted. Thus Dr. Halley, in a diving-bell sunk many fathoms deep in the sea, observed, that when he extended his hand out of the bell into the water, the upper part of it was red, and the lower part a blueish green. The redness was occasioned by the strong red rays, which in their progress through the mass of water were intercepted by his hand; while, on the contrary, the heterogeneous particles dispersed through the water reflected only the refrangible rays, so as to afford the appearance of green. These principles applied to many other of the phenomenon of nature will serve to explain their causes; and if they excite you but to use your own understandings, and to think for yourselves, this sketch of the phenomena of light and colours will be of more essential service to you than the most laboured detail.

NATURAL HISTORY.

THE second order in the system of Linnæus is the jugular fishes, and the first genus is the DRAGONET, of which there are three kinds: they are all destitute of scales; and are of a smooth, uniform body, attenuated towards the tail. The mouth is very small, thickly set with teeth, upon the jaws, tongue, and palate. The eyes are prominent, somewhat large, placed vertically, and near to each other. The upper lip is in this genus double; and it is also distinguished by a three forked spine, rising from each of the opercula of the gills, and lying backwards along the head.

The gemmeous dragonet is found as far north as Norway and Spitzbergen, and south as far as the Mediterranean: it is not unfrequently upon the Scarborough coasts, where it is taken by the hook in thirty or forty fathoms water. It grows

to the length of ten or twelve inches, and is often found in the stomach of the cod-fish. It breathes in the manner of the cetaceous fishes, by means of the two orifices in the crown of the head, through which it forces the water received by the mouth.

The sordid dragonet is inferior in size as well as beauty; being only about six inches in length, and about two in thickness. It is of an olive colour above and white below. The sides are marbled with small spots of silvery blue; and upon the top of the head is a triangular spot of a purplish colour. It frequents the British seas but rarely: Willoughby, however, asserts, that it is frequently seen in the fish markets of Rome and Genoa: its flesh resembles that of the bull-head, and its manner of feeding is the same.

GENUS II.—THE URANOSCOPIUS,

Of which there is but one species; a fish about nine inches in length, with a large, flat, and circular head. The lower jaw projects beyond the upper, and is turned upwards at the end; the eyes are small, prominent, and almost contiguous. The face is flat, and has the appearance of constantly staring upwards. Both the jaws are armed with sharp teeth, as is also the palate and whole inside of the mouth. The ventral fins in this species are placed far before the pectoral, and seem directly under the eyes: it is frequently caught in the Mediterranean, and is said to be a delicious morsel.

GENUS III.—THE WEEVER.

There are several species found on the British coasts, although Linnæus only mentions one, the draco, a fish of a long and compressed figure, marked upon the sides by a number of cinereous lines, that arise from the middle of the back, and proceed along the sides towards the belly.

It is frequent in the Mediterranean, where it grows from ten to fifteen feet in length; it is capable of inflicting a very severe wound by the spines of the first dorsal fin, which, if neglected, becomes cancerous, according to Rondeletius. For several hours the part affected is attended with a violent burning and shooting pain, sometimes with an inflammation,

tion, that reaches from the arm to the shoulder. The effects are commonly supposed to proceed from something venomous lodged in the spines, which look indeed suspicious; for those of the first dorsal fin are dyed with a blackish substance.

This animal is excellent food, and therefore is often taken, notwithstanding the noxious quality of the spines: it buries itself in the sand, leaving only its nose out; and if trodden on, immediately strikes with great force, each blow directed with a degree of judgment that evinces a consciousness in the animal of its own noxious powers.

GENUS IV.—THE COD

Contains a very numerous and well-known tribe of fishes, a considerable part of which frequent the British coasts, and contribute more largely to the subsistence of the inhabitants of Europe than any of those families which we have hitherto reviewed. Their general characters are, a smooth head; seven slender branchiostegous rays; an oblong body, covered with small deciduous scales. The number and situation of the fins are various; the teeth are small and numerous, placed upon each jaw, and in the upper part of the mouth.

The stated migrations of most of the fish that compose this genus, is one of the most remarkable circumstances in their history: in these annual voyages, in the immensity of their numbers, and in their social habits, they bear a strong analogy to birds of passage. The cod, the hadock, and the whiting, issue forth in immense shoals from the arctic seas, very early in the spring, and after having dispersed over the temperate latitudes, again regularly return to their northern retreats about the same time of the year. The necessity of procuring food has been assigned as the cause of their annual migrations from the arctic seas; and their retreat thither has been ascribed to the security that these unfrequented tracts are supposed to afford them while they deposit their spawn.

But although the cod undertakes annual excursions of considerable length, it still may be regarded as a local fish; for it never ventures into the warmer tracts of the ocean.

None

None are found in the Mediterranean, and few in those parts of the Atlantic of the same latitude. They are in greatest perfection, and seem to prefer that space lying between the fiftieth and sixtieth degrees; such as are caught beyond it being always inferior, both in quantity and quality. Their grand resort for centuries past has been on the banks of Newfoundland, and other sand banks off Cape Breton. That extensive flat seems to be the broad top of a subaqueous mountain, every where surrounded with a deeper sea. Hither the cod annually repair, in numbers beyond the power of calculation, to feed upon the worms that swarm upon the sandy bottom. Here they are taken in such quantities; that they supply all Europe with a considerable quantity of provision. The English have stages erected all along the shore for salting and drying them; and the fishermen, who take them with a hook and line, draw them as fast as they can throw them out.

THE HADDOCK

Appears upon the coasts of Britain annually, particularly those of Yorkshire, about the middle of December, in such vast shoals that they cover a tract frequently of many miles. They do not venture far from the shore; when the fishermen cast their lines beyond their limits, which is commonly about three miles from land, there are seldom any taken. The larger haddocks leave the coast as soon as they begin to be out of season, leaving behind only the smaller fish. This remark is applicable to all the fish that appear on the Yorkshire coast, except the mackrel, which alone remains after becoming unfit for use.

The haddock is the most common species in the London market, as it is not only plenty, but in season during the greatest part of the year. The larger fish begin to roe in the middle of November, and continue so till the end of January, when they are unfit for use. Those of the middle size recover about the beginning of May, and are in season till February; such as are incapable of breeding remain at all times fit for the table. In stormy weather none of this species take the bait; the fishermen assert, that they then ooze in the bottom of the sea, and shelter themselves there till

till the agitation of the water has ceased: in proof of this, they alledge that those which are taken immediately after a storm are covered with mud upon the back.

Of the same genus, but inferior in size, are the pouts, blinds, and poors. The latter is the smallest of the cod kind yet discovered, and it is the only one found in the Mediterranean. It is taken near Marseilles, and in such quantities as sometimes to prove a nuisance. It seldom exceeds six inches in length, and is unfit either for being dried or salted; if the first is attempted it grows as hard as an horn. The whiting is the most delicate and wholesome food of any of this genus: it appears in vast shoals on our coasts in spring, and is caught with a line from one to three miles from the land.

THE COAL FISH

Frequents the rocky and deep coasts all round this island, but is found in great plenty in the vicinity of the Orkneys, where their fry constitute a great part of the support of the poor. The young begin to appear on the coast of Yorkshire, in the month of July, in numbers that defy all computation: they are at that period only an inch and a half long; in August they are from three to five inches, and are taken in vast quantities with the angling rod; they are then reckoned a very delicate fish, but afterwards grow so coarse, that, by the time they are a year old, few people eat them. They are sold either fresh, or, when salted, in the counties of York and Northumberland, at an inferior price to the other species of cod.

THE HAKE

Has only two dorsal fins; grows from two to three feet in length, and is of a more slender shape than the common cod. Its form somewhat resembles that of the pike, whence it is called the sea-pike by the French and Italians.

The hake is found in abundance on many of our coasts, particularly those of Ireland, where there was formerly a stated fishery on the Nymph Bank of Waterford; immense quantities were caught there at the two seasons of their periodical appearance, June and September, when six men

with hooks and lines frequently killed a thousand fish in one night; the produce of this fishery was salted up and exported to Bilboa in Spain; it has, however, been for many years upon the decline, owing to the fish deserting their wonted station.

THE LING

Is longer than the river pike, being from four to six feet; the sides and back in some are olive-coloured, in others cinereous; and the whole figure of the body nearly resembles that of the fish last described.

The ling abounds more or less upon the coasts all round the British isles; it is, however, most frequent near the Scilly Isles, and those on the west of Scotland and Ireland, where it has long formed a considerable branch of commerce, regulations being framed concerning it so early as the reign of Edward III. The fish is in perfection from the beginning of February till May; in June they deposit their spawn in the soft muddy bottoms near the mouths of rivers; about this time the males separate from the females, many of the former being caught by fishermen, without a single individual of the latter.

THE FIVE BEARDED COD

Is of a deep olive brown; in its shape and slimy covering it somewhat resembles the eel; it is, however, much shorter and thicker, especially towards the belly: there are two different species, the one with five beards, and the other uniformly with three; the former has four upon the upper jaw, the latter only two.

The three-bearded cod is nearly of the same size with the other, of which Willoughby reckons it only a variety; it is, however, easily distinguishable, by having the upper part of the body variegated by a number of black spots upon a reddish ground. The Cornish fishermen have particular cant phrases, by which they imagine they charm these fishes, which they repeat in the same manner that the Sicilians do their *manassu di pajanu*, &c. when they are in pursuit of the sword-fish.

THE

THE TORSK

Is an inhabitant of the Orkney seas; and from having only one dorsal fin forms a class distinct from both. It is called by the inhabitants of Orkney and Shetland tusk or brisnac, and is seldom found in a lower latitude than that of these islands, where it swarms in great abundance, and is either dried or barreled up for exportation.

OF THE FIFTH GENUS.—THE BLENNY,

Linnaeus enumerates thirteen different species, only four or five of which are known to frequent our coasts; the gatorugine, the crested, the smooth-headed, the spotted, and viviparous blenny; all these haunt the rocky shores, and at low water are found under the stones among the tang. They are extremely active and vivacious; by means of their ventral fins they can creep among the rocks; and some species can live out of the water during the length of a whole day.

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XVI.

THE LIFE OF QUEEN CATHERINE PARR.

THIS excellent woman was the eldest daughter of Sir Thomas Parr, of Kendal, in the county of Westmoreland, knight, and, according to the custom of that age, received a most liberal education. Her first husband was John Nevil, Lord Latymer, after whose decease Henry VIII. was so smitten with her virtues and accomplishments, that he made her his wife in 1543.

She always took great pleasure in reading the sacred scriptures, and in searching after divine truth, by which means the clouds of ignorance and superstition were soon dissipated, and the genuine spirit of the gospel appeared to her in all its lustre. She was, indeed, supposed to have been piously inclined from her very childhood, as appears

from a book of her own composing, which will be noticed in its proper place; but the religious duties she so carefully practised in her youth were according to the blind devotion of the age; and the errors she then imbibed she not only retracted afterwards, but was very strenuous in promoting the reformation. This good work she advanced as far as the capricious temper of a tyrannical husband and the iniquity of the times would permit; and even further than she could well do without exposing her life to the most imminent danger. But though her endeavours were managed with prudence, and as much secrecy as the nature of things would allow, yet they were maliciously observed by Gardiner, Bishop of Winchester, who, with Chancellor Wriothesly and others, conspired against her so artfully, that having drawn up articles, they got a warrant, signed with the king's own hand, for committing her to the Tower, which being accidentally dropt, was found by one, who conveyed the same to the queen. The sight of this instrument, and the recollection of the hard fate of some of her predecessors, threw her into a violent disorder, which confined her to her bed. The king hearing of her illness made her a visit, and spoke to her all the kind things imaginable, sending her, at the same time, Dr. Wendy, his physician. The doctor soon guessed, from outward symptoms, the real cause of the queen's indisposition; and well knowing her singular prudence, and relying on her fidelity, ventured to communicate to her his sentiments and advice. The king being also indisposed and low-spirited, Dr. Wendy advised her by all means to go and endeavour to cheer him up, not doubting but that by her good management she might thereby avert the impending danger. The queen took his advice, and soon after went to see the king, whom she found talking with some gentlemen of his chamber. Henry was pleased with her attention, and breaking off his discourse with his attendants, he began of his own accord to confer with her about matters of religion, seeming, as it were, desirous to be resolved by the queen of certain doubts which he then mentioned. She instantly perceiving the drift of his discourse answered with great humility: "Your majesty doth know right well, neither am I myself ignorant, what great imperfection and
weakness,

weakness, by our first creation, is allotted to us women, to be ordained and appointed as subject unto man, who is our head; from which head all our directions ought to proceed; and that as God made man in his own shape and likeness, whereby he being endued with more special gifts of perfection, might rather be stirred to the contemplation of heavenly things, and to the earnest endeavours to obey his commandments: even so likewise made he woman of man, of whom, and by whom she is to be governed, commanded, and directed. Whose womanly weakness, and natural imperfections ought to be tolerated, aided, and borne withal, so that by his wisdom such things as be wanting in her ought to be supplied.

“ Since, therefore, that God hath appointed such a material difference between man and woman, and your majesty being so excellent in gifts and ornaments of wisdom, and I a simple poor woman, so much inferior in all respects of nature unto you, how then cometh it now to pass, that your majesty in such diffuse causes of religion will seem to require my judgment? Which when I have uttered and said all I can, yet I must, and will refer my judgment, in this and all other cases, to your majesty’s wisdom, as my only anchor, supreme head, and governor here on earth, next under God, to lean unto.”

“ Not so, by *St. Mary*,” replied the king, “ you are become a doctor, *Kate*, to instruct us (as we take it), and not to be instructed or directed by us.”

“ If your majesty take it so,” says the queen, “ then hath your majesty very much mistaken me, who have ever been of the opinion, to think it very unseemly and preposterous for the woman to take upon her the office of instructor or teacher to her lord and husband, but rather to learn of her husband, and be taught by him. And where I have, with your majesty’s leave, presumed heretofore to discourse with your majesty, in which I have sometimes seemed to dissent from you, I did it not so much to maintain my opinion, as to minister discourse, not only to the end that your majesty might with less grief pass over this painful time of your infirmity by this kind of engagement, which I fancied might afford you some relief; but also, that I hearing your ma-

jeſty's learned arguments, might from thence gain to myſelf great advantage. And I aſſure your majeſty I have not miſſed any part of my deſired end in that behalf, always referring myſelf in all ſuch matters unto your majeſty, as by ordinance of nature, it is convenient for me to do."

"And is it even ſo, ſweetheart?" ſaid the king; "and tended your arguments to no worſe end? Then are we now perfect friends again, as ever we were before." And, as he ſat in his chair embracing her in his arms, he ſaid, that "it did him more good at that time to hear theſe words from her own mouth, than if he had heard preſent news of an hundred thouſand pounds fallen to him." So ſaying, it being then late at night, he gave her leave to depart, and, when ſhe was gone, ſpoke highly in her praiſe.

The day and almoſt the hour appointed for ſending the queen to the Tower being come, the king took a walk in his garden, with only two gentlemen of the bed-chamber, and ſent for the queen, who inſtantly came to wait on him, attended by Lady Herbert, Lady Lane, and Lady Tyrwhyt, who were all to have been apprehended with her. The king ſeemed in high ſpirits, and entertained them in great good humour, till the preſence of the chancellor, attended by forty of the king's guards, damped their mirth. The king looked at him with a very ſtern countenance, and, walking a ſmall diſtance from the queen, called the chancellor to him, who upon his knees ſpoke ſoftly; but his majeſty, in a rage, was heard to call him knave, beaſt, fool, and to order him to depart from his preſence. When he was gone the king returned to the queen, who, perceiving that he was greatly agitated, uſed all her eloquence to pacify him, and to pardon the chancellor for her ſake.

"Ah, poor ſoul," replied the king, "thou little knoweſt how evil he deſerveth this grace at thy hands. On my word, ſweetheart, he hath been towards thee an arrant knave, and ſo let him go."

Thus remarkably did Providence deliver her from this imminent danger; after which ſhe paſſed ſafely through the remaining part of that black and turbulent reign.

She was convinced that the principles of the Romiſh religion, in which ſhe had been bred, were contrary to the ſcriptures;

scriptures; yet she would not trust entirely to her own judgment in so important a concern, and therefore kept some eminently learned and pious divines as her chaplains, with whom she held frequent conferences on the reformation of the church. She was likewise very assiduous in studying books of practical divinity, and especially the oracles of truth. Being thus qualified she began to commit some of her thoughts to writing. Her first composition seems to have been the piece entituled "Queen Katharine Parr's Lamentation of a Sinner bewailing the Ignorance of her blind Life," London, printed in 1548, and again in 1563. This discourse was found among her papers after her death, and was published by Secretary Cecil, afterwards the great Lord Burleigh.

Besides this she composed many psalms, prayers, and pious treatises. And as she knew well how far learning was subservient to the promoting of piety and virtue among the people, she used her utmost endeavours for the encouragement of it. Of this the following instance is a proof. When the act was made that all colleges, chantries, and free chapels should be at the king's disposal, the university of Cambridge was greatly alarmed, and made an application to the queen, entreating her majesty to intercede with the king for their colleges, which she did, and wrote the following answer: "that she had attempted for the stay of their possessions; and that notwithstanding his majesty's property and interests to them, by that act of parliament, he was," she said, "such a patron to good learning, that he would rather advance and erect new occasions thereof than confound these their colleges. So well, that learning might ascribe her very original, as well as conservation unto him," &c. And in the same letter she exhorts them "not to thirst after profane learning, and forget christianity in the mean time; as though the Greek university at Athens were transported into England, since their excellency did only attain to moral and natural things. But she admonished them so to study those doctrines, that they might serve as means towards the attaining and better setting forth of Christ's most sacred doctrine, that it might not be laid against them at the tribunal seat of God, how they were ashamed of Christ's doctrine.

doctrine. That she hoped that, in their several vocations, they would apply themselves sincerely to the setting it forth; and that they would conform sundry gifts, acts, and studies to such end, that Cambridge be accounted an university of divine philosophy, rather than natural or moral."

This shews the great influence she possessed over the mind of that arbitrary monarch, and the good use she made of it. In the latter part of his life the fierceness of Henry's disposition was intolerable, so that it was extremely difficult for his greatest favourites to please him, especially when he suffered much from his disorder; yet such were the amiable qualities of his queen, that, by her tenderness of behaviour and sweetness of conversation, she not only preserved his affection under all his pains and sickness, but greatly contributed to the alleviation of them, which fixed her so entirely in his good graces, that, after Bishop Gardiner had failed in his scheme, none of her enemies could venture any thing against her.

As a confirmation of the sense the king had of her virtues, take the following extract from his last will: "And for the great love, obedience, chasteness of life, and wisdom, we bequeath unto her for proper use, and as it shall please her to order it, three thousand pounds in plate, jewels, and stuff of household, besides such apparel as it shall please her to take, as she hath already; and farther we give unto her one thousand pounds in monny, with the enjoyment of her dowry, according to act of parliament."

Her great zeal for the reformation, and earnest desire to have the scriptures understood by the common people, induced her to employ several learned persons to translate "Erasmus's Paraphrase on the New Testament" into English, at her own expence. She engaged the Lady Mary (afterwards queen) to translate the paraphrase on St. John; and wrote to her an epistle in Latin for that purpose.

King Henry died January 28, 1546, when she had been his wife three years six months and five days. Not long afterwards, by much importunity, she was prevailed upon to give her hand to Thomas Seymour, lord admiral of England, and uncle to King Edward VI., which marriage proved to her most unhappy; for between the great pride
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and ambition of her sister-in-law, the Duchess of Somerset, and the boundless ambition and other bad qualities of her husband, such furious animosities ensued, as proved the destruction of both families; which necessarily involved the unfortunate queen in the most mortifying perplexities, and effectually put a stop to her studies and to all temporal enjoyments.

She lived but a short time with the admiral; for after being delivered of a daughter, she died in child-bed in September 1548, not without suspicion of poison. She herself, indeed, apprehended that some unfair dealings had been practised; and on her death-bed she flatly reproached her husband for his unkind and cruel treatment.

Where she was interred is not mentioned; but her epitaph, written in Latin by Dr. Parkhurst, one of her chaplains, is in English as follows:

In this new tomb the royal Kath'rine lies,
Flower of her sex, renown'd, great, and wise.
A wife by every nuptial virtue known;
A faithful partner once of Henry's throne.
To Seymour next her plighted hand she yields;
(Seymour who Neptune's trident justly wields!)
From him a beauteous daughter blest'd her arms,
An infant copy of the parent's charms:
When now seven days this tender flower had bloom'd,
Heaven in its wrath its mother's soul resum'd.
Great Kath'rine's merit in our grief appears,
While far Britannia dews her cheek with tears.
Our loyal breasts with rising sighs are torn;
With saints she triumphs, we with mortals mourn.

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF CHINA.

(Continued from page 152.)

Of the Chinese Dress.

THE Chinese dress consists of a vest, which reaches to the ground, the sleeves of which are very wide towards the shoulder, and grow narrower as they approach the

the wrist, where they terminate in the form of a horse-shoe, covering the hands, and leaving nothing to be seen but the ends of the fingers. The Chinese wear a large girdle of silk round the waist, from which is suspended a sheath, with a kind of knife, and two small sticks which they use at their meals.

Under this robe they wear drawers suited to the season. In summer they are made of linen, those for winter are of sattin lined with fur. Their shirts are in like manner adapted to the season, and under the shirt a Chinese generally wears a silk net, which prevents it from adhering to the skin. Their necks are always bare in warm weather; but in winter they wear a collar joined to their robe, made of silk, sable, or foxes skin. That of the mandarines and people of quality is lined throughout with sable brought from Tartary. In the spring it is lined with ermine. Above their robe they wear a kind of furtout with wide sleeves, lined in the same manner.

In China the law has regulated every thing that relates to dress, and has even fixed the colours that distinguish the different conditions. The emperor and princes of the blood alone wear yellow; certain mandarines are permitted to wear sattin of a red ground upon days of ceremony, but in general they are clothed in black, blue, or violet. The colour to which the common people are confined is blue or black, and their dress is always composed of plain cotton cloth.

The Chinese shave their heads, preserving only a small portion of hair on the top, which is generally suffered to grow very long. This part of their dress they were compelled to adopt by the Tartars, who subdued them, and who in every other respect adopted the laws, manners, and constitution of the people whom they had conquered. In summer they wear a pyramidal cap, lined with sattin, and covered with cane neatly wrought. To the top they fix a large tuft of red hair, which falling down covers it to the brim.

There is another kind of head-dress, which the mandarines and literati only have a right to wear: it is a cap of the same form as the preceding, but lined with red sattin, and

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and covered on the outside with white. A large tuft of the finest red silk is fixed over it, which is suffered to hang down, or wave with the wind.

People of condition wear boots made of satin, silk, or cotton, when they go out, but at home they wear slippers made of silk stuff. A Chinese, dressed according to rule, would consider it as great an omission to forget his fan as it would be to forget his boots.

The dress of the Chinese women appears to have been dictated by modesty herself. Their robes are close at top, and very long. The head-dress consists in arranging their several curls, which are interspersed with small tufts of gold or silver flowers. Young ladies wear also a kind of bonnet covered with stuff or silk, and adorned with pearls, diamonds, and other costly ornaments. We must not omit the custom of confining the women's feet to the size which they came into the world with, and which was once very general in China, but now grown into disuse, except among the most unenlightened of the people. The means made use of for this purpose are as follow; when a female is born, the nurse wraps up its feet, and confines them by a very close bandage; and this torture must be endured until the foot has ceased to grow. A Chinese woman subjected to this custom rather drags herself along than walks. The origin of the custom was probably intended to inspire females with a love of confinement, or to keep them in a continual state of dependance.

The dress of a villager differs from that worn by those who live in towns. It consists of a coarse linen frock, cotton vest, a pair of drawers, and wooden shoes, terminating at the toe in a sharp point, which is turned backwards.

White is the colour for mourning among the Chinese. A son has no right to wear it while his father and mother are alive; but he can wear no other for three years after their death; and even when this mourning is ended, his clothes ever after must be of one colour. The use of silk and furs is forbidden to children by the law, which has even prescribed the time at which they may first wear a cap, and the manner in which it must be given them. The master of the ceremonies places the cap upon their heads, and addresses them

them in the following words: "Consider that you now receive the dress of those who have attained to maturity, and that you cease to be children: renounce, therefore, all childish thoughts and inclinations, assume a grave and serious behaviour, apply with resolution to the study of virtue and wisdom, and endeavour to merit a long and happy life."

Chinese Buildings.

The Chinese buildings strike a spectator more on account of their extent than their magnificence. Many of the imperial palaces may be compared to cities, and those of the princes and principal mandarins are very extensive. The halls set apart for receiving visits are neat but not grand. The apartments for their women and children are inaccessible to every stranger, although the most intimate friend of the master of the house.

The Chinese gardens are particularly curious and celebrated. In these are seen groves, ponds, mountains, natural and artificial rocks. Their parks are stocked with deer and wild animals, and their ponds with fish and aquatic birds.

The Chinese use but little ornament in the interior of their houses; but the exterior of many of the mandarins' palaces is very finely decorated with painting, gilding, and silken streamers. The walls of these palaces are of great height, and guarded by towers; while a kind of glacis slopes from the foot of them to meadows agreeably planted with trees that generally stretch along the sides of rivers. Mr. Anderson gives an account of one of these, near which he saw a large body of soldiers drawn up on an esplanade, the line of which extending nearly a mile, divided into companies, distinguished by the variety of their uniforms, and enlivened by the number as well as the colour of their standards, offered a highly beautiful spectacle.

The pagodas in China are generally situated on lofty eminences; they are built of different materials; some of them are made of stone, consisting of eight or ten stories, each of which is encircled with balconies, and the whole is terminated

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nated in a roof, highly ornamented, and running up to a slender point. Some of them have flat tops, on which trees and shrubs grow.

In most of the towns in China the streets are very narrow, but they are kept remarkably clean and well paved. The houses are chiefly of wood, and two stories high; some of the shops are gilt and varnished. At every door in the streets, after sun-set, a large paper lamp is hung up, which forms a very pretty illumination. These lamps display the name of the person who lives in the house, his trade, and the articles in which he traffics.

Of Chinese Employments and Trades.

The following peculiarities, attached to Chinese trade, are mentioned by Mr. Anderson, in his narrative of the British embassy to China.

I observed, says he, a great number of butchers shops, whose mode of cutting up their meat resembles our own; nor can the markets of London boast a better supply of flesh than is to be found at Peking. My curiosity induced me to enquire the prices of their meat, and, on my entering the shop, I saw on a stall before it an earthen stove, with a gridiron placed upon it; and on my employing a variety of signs to obtain the information I wanted, the butcher instantly began to cut off small thin slices of meat, about the size of a crown piece, and broiled as fast as I could eat them. I took about a dozen of these slices, which might altogether weigh seven or eight ounces; and when I paid him, which I did by giving him a string of small coin, he pulled off the amount of the demand, which was ten of these small coin. I saw numbers of people in the butchers' shops regaling themselves with beef and mutton in the same manner.

The houses for porcelain utensils and ornaments are peculiarly attractive, having rows of broad shelves, ranged above each other, on the front of their shops, on which they dispose the most beautiful specimens of their trade in a manner full of fancy and effect.

Besides the variety of trades which are stationary in this great city, there are many thousands of its inhabitants who cry their goods about as we see in our metropolis. They

generally have a bamboo placed across their shoulders, and a basket at each end of it, in which they carry fish, eggs, &c. There are also great numbers of hawkers and pedlars, who go about with bags strapped on their shoulders, which contain various kinds of stuff goods, the folds of which are exposed to view. Barbers also are seen running about the streets in great plenty, with instruments for shaving the head and cleansing the ears: they carry with them for this purpose a portable chair, a portable stove, and a small vessel of water; and whoever wishes to undergo either of these operations, sits down in the street while the operator performs his office. To distinguish their profession they carry a large pair of steel tweezers, which they open with their fingers, and then let them close again with some degree of violence, which produces a shrill sound that is heard at a considerable distance; and such is their mode of seeking employment. This trade in China must be a very profitable one, because every man must be shaved on a part of the head where it is impossible to shave himself.

There are persons engaged in the open streets selling off goods by auction: the auctioneer stands on a platform, surrounded with the various articles he has to dispose of; he delivers himself in a loud bawling manner, apparently to the no small amusement of the audience.

Public and private Rejoicings.

Throughout the whole empire of China a grand festival is celebrated on the same day, it is called the vernal festival. In the morning the governor of every city comes forth from his palace crowned with flowers, and enters the chair, in which he is carried, amidst the noise of different instruments which precede it. A number of people bearing standards, lighted flambeaux, &c. walk before the musicians, and the chair is surrounded or followed by several litters covered with silk carpets, upon which are represented persons illustrious for the support they have given to agriculture, or some historical painting on the subject. The streets are hung with carpets; triumphal arches are erected at certain distances; lanterns are every where displayed; and all the houses are illuminated. A large figure made of baked earth, representing

representing a cow with gilt horns, comes next. A child with one foot naked and the other shod, which represents the *spirit of labour and diligence*, follows, beating the image with a rod, to make it advance. Labourers, armed with implements of husbandry, march behind, and a number of comedians and people in masks close the rear, whose grotesque appearance and attitudes afford entertainment to the populace. The governor advances towards the eastern gate, as if he intended to meet the spring, and then the procession returns to the palace in the same order. After this the cow is stripped of its ornaments, and a prodigious number of earthen calves are taken out of its belly, which are distributed among the crowd. The large figure is broken in pieces, and distributed in the same manner. The governor then puts an end to the ceremony, by making a short oration in praise of agriculture, in which he endeavours to excite his hearers to promote by all means so useful and valuable an art.

During the whole procession the streets are hung with carpets: lanterns are every where displayed, and the evening is closed with a brilliant illumination.

The Chinese have also two other festivals, which are celebrated with still more pomp than that already described. One of them is on the commencement of the year: the other is called the feast of the lanterns. During the celebration of the first, all affairs, whether private or public, are suspended; the tribunals are shut; the posts stopped; presents are given and received: the inferior mandarines go and pay their respects to their superiors; children to their parents; and servants to their masters. This is called *taking leave of the old year*. In the evening all the family assemble to partake of a grand repast. To this no stranger is admitted; but they become more sociable on the day following; and their whole time is employed in plays, diversions, and feasting, which is concluded in the evening with illuminations.

The feast of lanterns is universal throughout the whole empire, and all China is illuminated on the same day and hour. Every city and village, the shores of the sea, and the banks of the rivers are hung with lanterns of various shapes

and sizes. Some of them are seen in courts and in the windows of the poorest inhabitants. Rich people expend to the value of eight or ten pound sterling for one lantern; and those which are ordered by the emperor, viceroys, and great mandarins, cost from one hundred to a hundred and fifty pounds each.

These lanterns are very large, either painted or neatly gilt, and filled up with transparent silk, upon which are painted flowers, animals, and various other figures. Several lamps, and a great number of wax candles, are put into these lanterns; to the corners of which are fixed streamers of satin and silk of different colours, and a curious piece of carved work is placed over the top.

On the first of March dramatic pieces are performed on stages in the principal streets of the different towns through the empire, for the amusement of the poor people, who are not able to purchase these kind of diversions. This munificent act continues for a succession of several days at the expence of the emperor; so that every morning and evening during the whole period the lower classes of his subjects enjoy a favourite pleasure without cost, and bless the hand which bestows it upon them.

THE ANTIEN T AND MODERN HISTORY OF NATIONS.

OF THE PERSIAN MONARCHY.

THE Persian monarchy, in the height of its glory, included all India, Assyria, Media, Persia, and the parts about the Euxine and Caspian seas. This monarchy was founded by Cyrus, five hundred and thirty-six years before Christ, who, on account of his valour and achievements, was surnamed the Great, and it lasted about two hundred years. During the reign of Cyrus, the Jews were permitted to return to their own land, and were assisted by him in rebuilding their temple. Cyrus and his successors governed according to their own arbitrary will; they were revered by their subjects as gods, none daring to appear before

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forè their throne without prostrating themselves on the ground with profound reverence. After Cyrus had reigned with great glory for many years he made war against a people of Scythia, by whom he was defeated and slain, and, it is said, by order of Tomyris, their queen, his head was cut off, and put into a vessel filled with human blood, while at the same time she exclaimed, "Satisfy thyself with blood now, of which thou hast been so long insatiable." But Xenophon has asserted that he died happily, and was buried with great magnificence at Babylon.

Cyrus was succeeded by his son Cambyfes, who subdued Egypt, and added that country to the Persian monarchy. His reign was short, but it is recorded of him, that to prevent instances of mal-administration, he commanded an unjust judge to be slayed alive, and his skin to be spread over the seat of justice, at the same time promoting the son to the office which his father had proved himself so unworthy of holding.

Smerdis, one of the magi, succeeded Cambyfes, and pretended to be his brother, but the fraud was soon detected, and he with a considerable number of magi were slain, in commemoration of which an anniversary was long kept, called "the slaughter of the magi."

Darius,

* The religion of the Persian empire, conducted by priests called magi, was composed partly of the institutions of the Chaldeans, and partly of those of the ancient Brachmans, who are supposed to derive their name from Abraham, or sons of Abraham, born of his second wife Keturah, and instructed by their father in the worship of one God, without the intervention of images. We are told by Dr. Gregory Sharpe, that "from the later superstitions and pretended prognostications of the magi, the words *magi* and *magia* came to signify *conjurors* and *conjuring*, and from the false Smerdis, who had no ears, came the phrase of *Crop the conjuror*. In the succeeding reign the constitution of the magi was so much reformed, and held again in such veneration among the Persians, that Darius inscribed on the monument of Hytaspes, his father, that he had been the master of the magi. In this reformation of the magi Hytaspes was assisted by Zoroaster, who instructed proper persons in the mysteries of religion and philosophy; and these instructed

Darius, the next Persian monarch, one of seven nobles who undertook to depose and destroy the usurper Smerdis, was chosen to the office, in consequence of a resolution agreed on between them, that he whose horse neighed first should succeed to the crown. Darius was twenty-nine years old when he ascended the throne, and he soon distinguished himself by his activity and military prowess. He took and destroyed Babylon, and soon after undertook an expedition into Scythia, and in his way thither conquered Thrace; but in his main object he was unsuccessful, and was obliged to return home covered with shame and disgrace. A war was soon after kindled between Greece and Persia. After various success the Persians were completely defeated, at the celebrated battle of Marathon, by ten thousand Athenians. The Persians in this expedition are said to have lost two hundred thousand fighting men. Darius, not disheartened by this blow, was preparing for another expedition, when he died, in the thirty-sixth year of his reign, and was succeeded by his son,

Xerxes, who to revenge the slaughter made by the Athenians, marched into Greece with an army consisting of more than a million and a half of men; but being vanquished by Themistocles, at the battle of Salamis, he escaped in a small fishing-boat, leaving behind him an army of three hundred thousand men, under the command of Mardonius, which was soon after destroyed at the city of Plataea, by Pausanias, the Spartan general. Xerxes, returning from this expedition, was despised by his people, and was slain by one of his own life guards. But what high respect and obedience the Persians usually paid to their sovereigns we learn from Herodotus, who informs us, that Xerxes being once in considerable danger by sea, many, at the king's command, strove who should be the first in leaping over board to lighten the vessel, and save the prince's life at the expence of their own.

Under Artaxerxes *Longimanus*, so called on account of the

others, till, from a small number, they became sufficiently numerous for the priesthood of the whole empire: when the various old religions were abolished, and the new one became the religion of the vast Persian monarchy.—See *Sir Isaac Newton's Chronology*.

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unequal length of his hands, the successor to Xerxes, the Grecian cities, situated on the borders of Lesser Asia, obtained their freedom.

Of Xerxes the Second, and Ochus, the bastard, we have nothing remarkable to mention.

Artaxerxes *Mnemon*, so named from the excellence of his memory, studied the arts of peace; and, to secure his own power and tranquillity, he excited dissensions among the Grecian states. Artaxerxes had three brothers, of whom Cyrus the elder attempted to seize the government, but, after a bloody battle, was killed; and so desirous was Artaxerxes of the honour of having slain his brother with his own hand, that he put to death two men for saying that they had killed him. The Greeks, who had assisted Cyrus against his brother, though at the distance of six hundred leagues from their own country, made their way through the territories of the enemy: and there is no fact in history more celebrated than this, as *the retreat of the ten thousand*. The length of their journey has been calculated to be eleven hundred and fifty-five leagues, which was performed in the space of fifteen months. This retreat has been celebrated by Xenophon, one of the supporters of Cyrus, and a leader in the retreating army.

Artaxerxes reigned forty-six years, and was succeeded by Ochus, a most cruel tyrant, who beheaded in one day his brothers and near relations, to the number of fourscore. He surpassed all the Persian kings in the indulgence of his passions and in the cruelty of his government; and perished by poison, given to him by his physician, at the instigation of Bagoas, his favourite eunuch. Bagoas was an Egyptian by birth, and had conceived hatred to the king because he had plundered the Egyptian temples, and slain the sacred bull, or god Apis. Not satisfied with the death of the king, he cut the dead body into small pieces, and gave it, thus mangled, to the cats, and of the bones he made handles for swords.

Arses, the youngest son of Ochus, was elevated to the throne, who, in the second year of his reign, was put to death by the same Bagoas, and was succeeded by,

Darius Codomannus, a prince of mild and generous disposition, of great personal valour, and, with regard to his person,

person, he was esteemed the handsomest man in the Persian empire. He was not, however, able to withstand his fortunate rival Alexander the Great. By him Darius was defeated in three battles. The first of which was the battle of Granicus, where the Persians lost twenty thousand foot and two thousand horse. In this action Alexander himself was first wounded in the head, afterwards in the side, besides having a horse killed from under him. In the second battle, which was fought near Mount Taurus, Darius lost, with his army, his wife, his mother, and his children and with much difficulty escaped himself: after the third defeat at Arbela he fled to Media, where he was betrayed, and mortally wounded by Bessus, governor of Bactria. Two years after, Bessus was taken and sent to Alexander, by whom he was delivered to the brother of Darius, who cut off his nose and ears, and nailed him to a cross, as a mark for the soldiers to shoot at.

Although the Persian monarchs were masters of the whole of Asia, yet they were at all times unsuccessful in their attacks upon the Scythians and Greeks. It had therefore been the policy of the Persians, for a number of years, to promote dissensions among the Grecian states, and occasionally to afford assistance to the weaker against the more powerful. Darius Codomannus despised, or was ignorant of this art, and thereby drew the united strength of Greece upon him; hence all Asia was subdued by the Macedonians, and an end put to the Persian monarchy.

Darius, who had been wounded with a shower of arrows, was left lying alone in a cart, to which the groans of the dying monarch conducted Polystratus, a Macedonian. The king, very near his end, had strength enough to ask for water, which Polystratus readily brought him. After drinking he charged him to return his hearty thanks to Alexander for the kindness he had shewn to his wife, mother, and children, and to acquaint him, that with his last breath he besought the gods to prosper him in all his undertakings, and make him sole monarch of the universe; adding, that he thought it needless to beseech him to punish those traitors who had treated him with such cruelty, as it was the common cause of kings. Then taking Polystratus by the hand,

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"Give him," said he, "your hand, as I give you mine, and carry him, in my name, the only pledge I am now able to give of my gratitude and affection." Having uttered these words he immediately expired in the arms of Polystratus. Alexander soon after arrived at the spot, and beholding the body of Darius, burst into tears, bewailing the cruel lot of a prince who, he said, had deserved a better fate. He immediately pulled off his own military cloak, and covered the corpse, and causing it to be embalmed, sent it in a rich and magnificent coffin to be interred with the other Persian monarchs.

The literati in antient Persia were divided into two sects, the magi and the sabæans. Of the former we have already spoken. The latter held the stars to be gods, and the sun to be the chief god, because they supposed him to govern both the upper and the lower world. They worshipped also idols and images, on which account all worshippers of images were formerly comprehended under the general name of sabæans.

PRACTICAL INSTRUCTIONS

On Taste, Literature, and the Art of Composition.

CONTINUED IN A SERIES OF LETTERS FROM A FATHER TO
HIS SON.

LETTER XV.

My dear George,

IN my last letter I endeavoured to give you some notion of eloquence in general. I considered it as divided into three kinds, the nature of which I endeavoured to explain. I also gave you a very short history of the Grecian orators, and their several characters.

I now proceed to consider the state of Roman eloquence. The Romans were originally a rude and warlike people, who bestowed but little attention on the polite arts, yet they will furnish us with an orator who may be considered as a model of eloquence, in its most splendid and illustrious forms.

forms. The Romans themselves own that they received all their science from the Greeks. The former were a more brave and magnanimous people, but less given to study; their language is firmer and more grand, but less sprightly than that of the Greeks; we find in the latter more invention, but the performances of the former are more polished. There are but few among the Romans who excel in oratory, though Cicero endeavours to give some reputation to Cato the Censor, yet none of them carried that art to any perfection till Cicero himself appeared. Without taking notice, therefore of the rest, I shall consider the merits of this distinguished orator; and as he has been very generally admired, at the same time that I point out his beauties, I shall think myself obliged to remark his faults. His beauties are eminent and indisputable; he was an excellent master in the art of persuasion; his method is clear, and his arguments are always arranged with the greatest propriety: he is superior in clearness to his rival Demosthenes; he always convinces before he endeavours to move us; he is always full and flowing, but never abrupt. Sometimes he rises to the Demosthenic warmth, particularly in his orations against Verres; yet it cannot be dissembled that in his compositions we see too much of art. Though he is copious yet he cannot be charged with diffuseness; his periods are properly diversified, which renders them always agreeable, but he is likewise too full of himself, and takes every opportunity of speaking in his own praise; and though the antient manner and the freedom that was taken in reproaching their opponents may in part account for this practice, yet, on the whole, he appears too much tinctured with vanity. Some of his contemporaries throw out such invectives against him as can only proceed from personal enmity. This must be accounted for from the state of parties; they were divided into two factions, the Asiatic and the Attic. The Attics, who pretended to what they called the chaste and simple style, charge him with corrupting the eloquence of the Romans; while he retorts upon them, and alleges that their style was frigid and feeble. Quintilian decides in favour of Cicero.

Critical writers have drawn a comparison between Cicero
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and Demosthenes. Demosthenes has more force and vigour, Cicero more gentleness and insinuation. Quintilian says there appears more of nature in Cicero and more art in Demosthenes, but he does not in this instance appear to decide with his usual accuracy and judgment: for in reading Cicero's orations we perceive a great deal of studied ornament, though there is but little of this kind in Demosthenes. The apologists of Cicero endeavour to account for this from the nature of his audience. Demosthenes, say they, delivered his orations before a polite, quick, and lively people, who could easily perceive his meaning, though delivered in a concise manner; but the Roman orator delivered his to a dull, phlegmatic assembly, therefore was obliged to place every thing in the most varied and captivating view. This reasoning, however, is more specious than solid. Demosthenes delivered his orations to a mixed multitude, whereas Cicero generally addressed his to the conscript fathers, or to judges appointed for special causes: we cannot imagine that the politest assembly of the Romans were more dull than the common people of Athens. The truth seems to be, that all the qualifications necessary to form a perfect orator are not granted to one person. All the French critics have declared for Cicero, except Fenelon, who preferred Demosthenes. His essay on oratory is a piece of excellent criticism, and well worthy your serious perusal. One of their critics endeavours to prove the superiority of Cicero in a way that is somewhat extraordinary; he says that Demosthenes had delivered all, or at least the greater part of his orations before Aristotle's system of oratory was published, and therefore could never reach the heart in such a manner as Cicero who was guided by these rules; but it is certain that these orators drew their qualifications from a higher source than the school of the Rhetorician.

After the age of Cicero the Roman eloquence soon declined; Providence in wrath delivered up the Roman empire to a race of monsters of cruelty, who were no friends to true eloquence, so that the public speeches were nothing but panegyrics filled with the most fullsome compliments. It was also corrupted in the schools; they were naturally fond of ornamental eloquence, but this soon became feeble, and

and they studied point and antithesis alone, which decorates only with a false brilliancy.

After the preaching of christianity a new style of eloquence was introduced of the highest importance as to the subject, but less animated than the eloquence of debate, because it is more of a didactic nature. The Epistles of Paul, however, and even some of the later Fathers contain specimens of eloquence superior to any, I will affirm, to be found in the compositions of either Cicero or Demosthenes.

A late French writer, the unfortunate Marquis de Condorcet, in a posthumous work, affects to speak lightly of the writings of the Fathers. His remarks, however, only prove his ignorance, and shew that, like the rest of his miserable and contemptible sect, he has the effrontery to censure writings that he never read. They shew that he has never perused the sweet and flowing orations of Chrysostom; the animated addresses of Gregory Nazianzen; the unequal but sometimes sublime compositions of St. Augustine; the strong and nervous periods of Tertullian; and Lactantius, who abounds in all the learning of the times, and in every beauty of composition. The criticisms even of Dr. Blair, on these writers, prove that he was not much more conversant with them than Condorcet himself. It is, perhaps, sufficient to say, that the most eloquent preacher of the present times confessedly formed his style altogether on that of the ancient Fathers.

The only countries in modern Europe where we can expect to find eloquence cultivated are France and England. The French have naturally a sprightly genius, and a taste, though not a correct one, for all the polite arts. The English have had a great advantage, both from their genius and the nature of their government; they have both however produced very great men in many different professions, and some orators who might justly contend with either Demosthenes or Cicero.

In England, however, as well as in Greece and Rome, the highest efforts of eloquence seem confined to the great

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assembly of the nation. There are, no doubt, some good speakers who plead at the bar, but none of those orations are transmitted to posterity, while we read those of the antients with pleasure. The sermons of the English writers are inferior to none in good sense and reasoning, but they appear in general deficient in spirit and animation?

In the writings of Bossuet, Bourdeloue, and Masillon, we see a much higher kind of eloquence aimed at than by any English preacher, but these are as lamentably deficient in matter as the English are in style; and, if we except a few sermons of Masillon, there are not many of them worth reading.

The legal orators of Greece and Rome had some advantages over ours, which it is but justice to point out. The laws of the antients were but few in number, so that the orators were rather obliged to shew that the actions of their clients were agreeable to common sense than to any written law. But at present the lawyers draw all their arguments from precedents and acts of parliament. Our system of law is also much more complicated, and to obtain a correct knowledge of it requires the study of a whole life. The art of speaking is therefore but a secondary object; so that if our pleaders are inferior to those of the antient republics, it is not from the want of genius, but from the want of cultivating it in the same manner.

Mr. Hume, however, when he highly extols the antient and depreciates the modern eloquence, only shews that he had neither learning to understand the one, nor taste to estimate truly the other. But the slender talents, and the gross ignorance of this infidel writer, will one day or other be apparent to the public, on whom he has too long imposed.

THE LITTLE HERMITAGE.

(Continued from vol. III. page 102.)

LOUIS, Paul, and Honorius, much pleased with this discovery, immediately began to make use of their new watering-pot. Whilst one of them largely sprinkled the

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withering plants, another worked the bucket, in order continually to renew the supply of water; and relieving each other by turns at this double exercise, they found it an amusement so much the more agreeable, as in a short time they had the pleasing recompence of seeing all their plantations acquire a force of vegetation which promised a most plentiful crop.

Their most necessary labours being thus terminated, and the care of their property taking only a part of their time, they often abandoned themselves to exercises of another kind. Sometimes playing in the meadow, they challenged each other to leap over a broad ditch or a high bush. Sometimes running in a line, at a certain distance from each other, the first would stop suddenly, stoop down his head, stretch out his back, and the two followers would spring with agility over his shoulders, then stop themselves at a proper distance to be jumped over by the first in his turn, and so on successively. Sometimes placed in three points, the extremities of a large triangle, as they made an elastic ball bound on the turf, they would strive with their hands and feet to send it to each other, making it describe long semicircles in the air. Sometimes snatching a bow that Joseph had taught them to string, and directing their arrows against a hat, fixed for a butt, on the slope of a green terrace, they founded a prize for the best shot; or mounting on the highest summit of a hill, and brandishing a sling on their arm, they alternately tried who could throw a stone with force enough to make it cross the whole valley. They themselves were astonished at the strength and suppleness which they daily acquired by these kinds of games; and they said among themselves: "We were not so strong as this before we built our house; papa was right in saying that it is work which makes little boys grow." "But why," asked they one day of each other, "do these stones and these arrows, which we dart so well, and which fly so swiftly, that the eye can scarcely follow them, always end by falling to the ground, inclining more and more to the end of a certain course? What is it that hinders them from going farther?" "Have you not observed," said Paul to Louis, "that in proportion as a stone thrown into the air approaches

approaches the ground, it seems to fall faster?" "O, phoo," replied Louis, "you think you see that, but you are mistaken; there is no reason why a stone should fall faster at one time than another." "But I assure you that I am not mistaken. Look now, I will roll this great stone from the top of the hill to the bottom, and you shall see whether, in proportion as it descends, it does not move more and more rapidly."

Honorius was of Paul's opinion, but Louis would not give up; they agreed to refer the question to Joseph. They found him at the bottom of the meadow, seated among tufts of trees, and labouring to form an elder stalk into a little flute, whilst his faithful dog was watching his flock. After having heard the subject of their debate, he decided that Paul was in the right, and that the effect which he had observed was by no means an error of the sight.

"It is a first law of nature," said he, "that all bodies, all the material objects that compose our world, even those which appear to us to float in the air, and have no weight, should tend, always and every where, to move towards the center of the earth. They seem as if perpetually drawn towards it by an invisible hand, which exercises its power over them, to whatever distance they may be removed. Now it is this force, which is called *attraction*, which is the cause of all the effects which you see in the fall of bodies. When, for example, you shoot an arrow, or throw a stone, towards the sky, or from one place to another, what do you do? You impress on this body a particular motion, and one contrary to the attraction which governs it. What then happens? as long as the impulse which you have communicated to it is stronger than its tendency towards the earth, it obeys your motion. But as it proceeds, it does not cease to struggle against the power of attraction which always attends it; but in proportion as it struggles against this force, it loses that which you had given it, and in proportion as it loses it, it recovers its natural direction. This is the reason that you always see a stone, or any other body, however strongly it may be launched, end by falling again to the earth, describing a curved line, which is called a parabola.

“This is, then, the difference between that motion which men can communicate, and that which results from the power of attraction; that men cannot renew the motion that they have given to a body, when once it is out of their hand. On the contrary, the force of attraction has the property of augmenting and accelerating continually the motion of a body, which it recalls to the earth. This is so true, my little friends, as you will one day learn, that a body suffered to fall down by itself, falls fifteen feet in the first second, forty-five in the second, and seventy-five in the third; so that a person may know exactly the time that a body will take in falling from the top of a tower whose elevation is known. It is in consequence of this acceleration of motion in the fall of bodies, that you see a stone in falling down make a percussive on the bodies which it touches, stronger in proportion to the length of space that it has passed through. This is also the reason why a little boy who leaps from a high window will hurt himself much more than if he only jumped off a table.”

Whilst he spoke to them in this manner, his three little auditors, fixing their eyes on the instrument which he was turning in his fingers, boring it with several holes, appeared to give more attention to the motion of his hands than to the sense of his explanation of the motion of bodies. As soon as he had finished his discourse: “What are you doing there?” said they to him. “What are you going to make of that little bit of elder?” Joseph made them understand directly, by placing the little tube crosswise on his lips, and uttering a sound very like that of those flutes known by the name of flageolets. I leave to be imagined the surprize, the joy, the wishes, the impatience, the disputes of the three children to blow, in their turn, this instrument, so new to them, the form and construction of which they were never weary of examining. It is needless also to say that Joseph had no rest till he had made one like it for each of them. During the first days that they tried they could only produce harsh and discordant sounds; but little by little Joseph taught them to modulate the tones with sufficient regularity to be able to form with them little concerts in four parts. It was thus that in the midst of this deep solitude, during

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the calmness of a clear and serene day, the astonished echoes were often awakened by notes hitherto unknown to them.

One day when our young musicians had placed themselves on the slope of a high hill, under the shade of two elms which bent over an arch, they were inexpressibly surprized to hear the conclusions of their airs repeated two or three times over from the opposite side. "Does it not seem," said they to one another, "as if there were people hid in the wood down there, who amused themselves with counterfeiting all the sounds that we make? But as there is certainly nobody in all this country who has instruments like ours, it is not possible that it should be any living person who produces this imitation. Then how can it be made?" Joseph, whom they consulted, soon put an end to their uneasiness, by explaining to them that the air alone produces all the noise that we hear; that it alone is essentially sonorous, and that the different modifications of sounds which affect our ears are the effect of the different vibrations or agitations produced in its parts. "When the wind," said he, "which is nothing but air in motion, blows strongly, as it passes by doors or windows which are ill closed, or among the leaves of trees, you hear it produce different noises, different sounds; well! in the same manner, when we sing, or blow a wind instrument, when we cause the string of a harp or pianoforte to vibrate, when we strike upon a bell or other metallic body, we excite a quivering, a trembling in the particles of the air, which, by repulsing them and making them strike against each other, causes a peculiar sound to result. Air being, as I have already told you, a fluid mass, nearly like water which presses and floats upon the whole surface of the earth, it follows that, as soon as a shock is produced on one point of this mass, a shaking is communicated to all the circumjacent air at a greater or less distance, nearly similar to those circular undulations which you see extending by degrees over the whole surface of a river or canal, when you throw a stone into it. Now what do you observe farther when you see these undulations arrive at the bank of the canal, which prevents their extending farther? They return upon themselves, and extend in a contrary direction, as long as they have force enough

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remaining.

remaining. It is the same with regard to the undulations of sound produced in the mass of air. When they meet in their passage with an obstacle which opposes the continuation of their motion, as a mountain, a building, or a wood, they are reflected, and turn back again; and if they have force enough to arrive again at the place whence they set out, they produce upon the ear of the person stationed on that spot the double sound, which we call an echo. It is necessary, however, that the observer should be placed at a proper distance from the obstacle, so that he may distinguish the sound which it sends back, otherwise he will only hear one at the same instant. Now I must also tell you on this subject, my little friends, that sound travels in a second the distance of two thousand yards, or about a mile and a third. Thus, from the place in which you stand, you see it is only about six hundred yards to the opposite side. But you also see that this side forms different bendings, different angles, both prominent and retreating, more or less distant from each other. The sounds proceeding from this cannot, consequently, arrive thither and return but successively, and at different times. Thence proceed, my little friends, the repeated echoes that you have heard."

It was particularly when rain, or some passing storm, obliged them to remain under the shelter of their cabin that the boys attempted to form their little symphonies to divert their leisure. Sometimes, too, during these moments of retreat, they employed themselves in plaiting baskets of rushes, in making some gardening utensils, in repairing those that were damaged, in shaping bows and pointing arrows; and, during the silence of these sedentary occupations, some one was commonly employed in relating some story. When Joseph was with them it may well be imagined that the office of narrator devolved upon him. They loved particularly to have him tell them adventures of travelling, and speak to them of the countries that he had passed through, and the people who inhabit the different countries of the earth. When, for example, in the course of a story he offered to them the picture of a traveller bewildered in the midst of gloomy forests inhabited by savages, or that of a ship assailed by a violent tempest, dashed to pieces against the rocks, and

swallowed

swallowed up in the deep abyffes of the ocean; then that of a poor paffenger escaping alone from the fury of the waves, and faving himfelf by swimming on a defert ifland, where he remains abandoned to nature alone; or when he gave them a defcription of a battle, after which the furious troops were feen overrunning the country, ravaging the harvefts, carrying every where fire and fword; at thefe relations the tender minds of the three children remained as it were fufpended; the emotion with which they were filled was painted on every feature of their countenances; and the idea of thefe diftant dangers redoubled in them the fentiment of fweet fecurity, which they enjoyed under the peaceful fhelter of their little cabin.

(*To be continued.*)

GRAND CONTEST OF SUCCESSFUL CANDIDATES.

FIRST PRIZE ESSAY,

On the Queftion for No. 16, of the MONTHLY PRECEPTOR,

"What are the refpective merits of the antients and moderns in fcience and literature? In what arts, and fciences, and in what branches of literature did the antients particularly excel, and in what are the moderns fuperier to them?"

By Mafter DANIEL PARKEN.

IT is a pleafure of the moft exalted kind to contemplate the viciffitudes of nature; to obferve, during the revolution of ages, the various character of the human mind; to note the perpetual reproduction of caufe and effect; and to compare the alternate illumination and obfcurity which diftinguiſhes the memory of centuries and of nations. Here is prefented not only a ſcene for curioſity to admire, but a field for philoſophy to examine, to explore, to investigate. At one time we remark with delight the ſplendor, the elegance, and the attainments of Greece; at another we mourn her perſonal ſlavery, her lethargic ignorance and infatuation, and the total abſorption of every generous energy. Cities once taſteful, poliſhed, and refined, are now only the wonder of the traveller, and the ſpeculation of the philoſopher. Rome, at another period, renews and centers the glory of Athens and Lacedæmon: after the lapſe of time ſhe too ſinks

sinks a mighty ruin, the haunt of luxury, effeminacy, and vice. Thus the barbarians of one age are the heroes and geniuses of the next, till the stupendous wheel, in another revolution, return them to disgrace and obscurity. Thus the painted inhabitants of Gaul and Britain are the glory of the present hour; and, if conjecture may venture to predict, America shall be classically elegant when Europe once more glimmers and fades into inanity.

In the comparison of antient and modern merit the department of literature seems to claim our first attention. And here should we admire, with grateful veneration, our illustrious and untutored preceptors. Guided by their successes, cautioned by their failures, and trained by their instructions, we glory in equalling their unassisted productions, and our chief lustre is the reflexion of their original radiance. However pleasing the office of retracing and exemplifying the character and style of the poets, historians, and orators of past times, I will not fill this paper with a pompous display of celebrated names, but observe only, that if the revolution of ages produces no effect superior to the examples it has to imitate, we must certainly infer a great deficiency of genius or application. What shall we say, then, of a Homer, a Demosthenes, a Virgil, an Horace, whose eminence the moderns have barely approached, though directed by the splendor which signalizes their footsteps. Whatever honour, therefore, we may claim as refined and elegant, as capacious and enlightened, surely the noblest wreath shall crown their memory, whose intrinsic merit is at least equal, and whose real excellence so evidently superior.

When we stray from the seats of the Muses to the abodes of science, we find the antients very deficient in the examination. They gazed with ignorant amazement on what our researches and perseverance have made the guide of commerce, and the talisman of the ocean. They trembled at the lightning's blaze, which we have explored, imitated, directed, and subdued. Their observations on the powers of the loadstone and the virtue of amber continued as long as the incidents which excited them were novel and striking; then their ardour deadened, and their enquiries ceased. A natural consequence of this want of exertion was, their ignorance

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norance and timidity with respect to navigation. And here we may remark, on how fine a link depends a chain of unforeseen events of the most important intellectual acquisitions. Had they continued their attention to the loadstone they would have discovered its polarity, as they appear to have known its power of communication. Had they thus invented the compass, they would probably have traversed the ocean to discover the place whither the sun retired to bathe and repose after the labours of the day. Then the rotundity and motion of the earth, the fixed position of the sun and stars might have been the fruit of their enterprize and sedulity. But it was decreed that the moderns should obtain the palm of astronomy. To them it was left to discover a new world, and to determine the figure and limits of the whole. To them it was permitted to ascertain the laws of Nature, to fix the revolution of planets, to assign to each its station, to measure its dimensions, and admire the divine and glorious harmony of the universe. What enlargement of the understanding, what dereliction of prejudice have been the consequence I need not mention. Our calculations have decided to an instant the phenomenon which has determined the fate of battles by the terror it has diffused. Thales, indeed, is said to have calculated the time of an eclipse, and several other proofs of his genius and information are recorded, such as the division of the earth into five zones, and of the year into three hundred and sixty-five days. But the appearance of a comet they had no idea of explaining: it was a demonstration of the wrath of the powers above, the herald of anarchy, devastation, and horror. We have reason to hope that our conjectures, as to the exact time of its return, may, by the observations of futurity, be reduced to equal certainty with our knowledge of its nature and of its innocence.

The science of mechanics owes great part of its present perfection to the labours and the ingenuity of the antients. The talents of Archimedes were of the highest order; the machines he invented, terrible even to Roman courage; the vein of genius which runs through all that is related of him, cause us to regret the untimely death which lost him to the world. The other engines of war, in use among the antients;
such

such as Demetrius employed against Rhodes, serve to shew that our superiority is owing nearly as much to the improvements and perseverance of ages, as to any peculiar genius which distinguishes the present time. Every machine, indeed, is now brought to the pitch of perfection, uniting the most delicate nicety of execution with resistless force, yet controllable by the slightest well-directed impulse. The greatest effort of mechanic ingenuity, which ennobles the country, as well as the name of its inventor, is the steam engine, a machine which leaves at an humble distance all prior examples of the vast and the powerful.

With more originality our discoveries have been equally great in the science of optics. The various powers of the lens, the velocity and refrangibility of light, the doctrine of colours, the consequent explanation of the rainbow, and particularly the invention of the telescope and microscope, give a new expansion to human capacity. By the one our ideas are enlarged, our partial narrowness of mind corrected, by inducing us to consider the heavenly bodies not as lamps for the convenience of the insect man, but as the regions of other unknown existences; the other demonstrates the power of the Creator in a point equally amazing, with the grandeur of immensity, the delicacy of infinite minuteness, the myriads which live in a drop of vinegar, each possessing a portion of that intelligence which animates the creation. In this contemplation, entirely unknown to the antients, to mention the gratification of our curiosity would be futile and impertinent. We should rather admire this spectacle as a proof of the divine and all-pervading Omnipotence, and, by convincing our reason, as leading our hearts to heaven.

To enumerate the wonderful discoveries in the science of chemistry would fill a volume. The perfection and precision with which every process is now conducted, the system of analyzation, so certain and complete, our view of the vegetable and mineral world, so enlarged and corrected; these improvements are the glory of modern science. The applause of a Priestley and a Watson posterity will resound, since even their contemporaries have appreciated their merit. There are, nevertheless, some secrets which remain unknown to us, and with which the antients were acquainted.

quainted. The composition, for example, to temper steel designed to work in porphyry; a beautiful species of marble, which turns the edge of any common instrument. It is greatly to be lamented that the barbarous superstition of that age intimidated Bacon from making public the proficiency he is represented to have attained in the various pursuits of chemistry, branded, at that period, with the opprobrious appellation of magic.

The sciences of hydrostatics and hydraulics afford us, likewise, a new proof of modern superiority. For however advantageous the discoveries of Archimedes to the study of this science, yet they are far excelled by the invention and assiduity of the moderns. Our engines of this species are another proof of the improved abilities of man, to eject water to a surprising distance by its own action;* to traverse the air with air alone for our support. Heat discovers to us every slight variation in its power; air indicates to us its present density, and warns us of its approaching effects. Could a sage of Greece be introduced to the present state of nature; could he be immediately informed of all that time, genius, and perseverance have unfolded, how would he mourn his former self-important ignorance, with what ecstasy would he hail the meridian of science, and the domination of truth.

I regret that due brevity, already too much transgressed, requires me to omit the mention of ethical, logical, and political improvement, in which, by reviewing the changes and revolutions on this great theatre, we have obtained a superiority that natural circumstances denied to the ancients. It is from events in which they were personally concerned, that our leisure and reflection have formed conclusions and principles. We cannot but remark, that in the sciences, generally, which time and successive exertions have been necessary to mature, the ancients are greatly our inferiors.

We now enter on a field where their merit is more conspicuous, and a few observations on our respective proficiency in the arts must close a discussion exhaustless as it is interesting.

* London Bridge.

On the subject of painting we have little reason to exult. The genius of invention, the truth and delicacy of execution, which history records as the qualities of Apelles, Protogenes, Parrhasius, and Zeuxis, far exceed the pretensions of the modern votaries of this art; and notwithstanding the great merit of Raffaele, Corregio, Caracci, Rubens, Titian, and Salvator, yet, as far as history may be allowed as testimony equal to the existing productions of these masters, they must certainly yield to the painters of Greece. We hear of nothing to be compared with the interlineations of Apelles and Protogenes, with the deception of horses by Apelles, of birds by Zeuxis, and of Zeuxis by Parrhasius.

In the art of sculpture the Laocoon, the Medicis, the Belvidere, the Gladiators, sufficiently demonstrate our inferiority, which the relations concerning Phidias, Pygmalion, Praxiteles, and Lytippus, abundantly corroborate.

In architecture we are again to seek for excellence among the antients; and there we find models of taste, proportion, and elegance unequalled by the moderns, with all the advantages of imitation. In this branch, however, we have attained a station far nearer the summit than in sculpture or painting. In England the works of Inigo Jones claim the admiration of every man of taste, as combining pure and Attic elegance with appropriate strength and majesty.

If we consider music as an art, the antients will, perhaps, obtain our applause; if we view it as a science, our warmest approbation is, undoubtedly, the meed of the moderns. Indeed it is difficult to believe all that is transmitted to us of its antient effects. The fire of genius which glowed in their poetry had, probably, at least an equal share in soothing or exciting the passions. And in the composition of music, in the combination of harmony, history affords us no competitor worthy to be named with Handel, Corelli, Haydn, Pleyel, or Mozart.

Among the modern inventions printing certainly bears the pre-eminence. And, indeed, if Europe shall continue to be the delight of science, her decay will be, in a great measure, retarded or prevented by that general diffusion of knowledge which printing has effectuated. No terrible accident, no barbarous

barous invasion, can utterly destroy the works of the present age, so widely extended, so easily and rapidly multiplied.

The invention of gunpowder, by a kind of paradox, has greatly lessened the slaughter we read of in antient contests. Such was the carnage at Cannæ, and such the victories of Marius, in one of which one hundred and forty thousand, in another two hundred thousand barbarians were left on the field of battle: scenes of extermination happily unparalleled in the present age. War, it has been justly observed, is reduced to a degree of system, and success is almost a matter of calculation.

The accidental discovery of glass can only be considered as an addition to our convenience in any other sense than its utility in optics, since the antients made use of oiled paper or vellum for their windows, and of polished metal for their mirrors.

Among the arts we must also remember those of engraving in all its branches, and of modelling in gypsum, each possessing the qualities of convenience, beauty, fidelity, and dispatch.

The innumerable manufactures now cultivated, the emulation of porcelaine in various parts of Europe, particularly in England, the salt-works, the iron foundaries, the entire cities of Coventry, Birmingham, and Manchester, upon these I shall not attempt to enlarge. In all these improvements, of which chance, in some measure, has been the parent, let us consider, ere we exult in the honour of invention, the numerous advantages posterity ever enjoys, and how much this idea must detract from the merit of the moderns.

One species of art, however, I had forgotten, which we must allow exclusively to the Tyrians, and their colony, Carthage, the method of dyeing; another secret, in the preparation of murex, with which we are unacquainted.

While I apologize for my tedious length, I cannot refrain from offering a comparison on the subject of religion and general virtue.

To the revelation with which we are favoured we probably owe something besides our knowledge of real religion, and

of the nature of the Divinity. We owe a great enlargement of mind, a connection between our reason and our worship, which the antients, enveloped with the darkness of superstition, could never attain. What confusion must it cause in the ideas, to contemplate with the eye of reason, Jove, Venus, Mercury, Mars, Diana, each guilty of the most flagrant violations of those laws of morality which nature has implanted in our breast, and incorporated with every sensation, as objects of adoration, as the protectors of virtue, and guardians of mankind. All, surely, must regard with astonishment those antient models of benevolence and worth, which few, very few of the present age, with the advantages of an immediate and indubitable revelation, have equalled in the performance of moral duty. The minds of the Greeks appear to have had something more of the divine in their composition than the generality of the modern world. They were all alive to the ardour of glory. Avarice, as yet, had not contaminated and paralyzed the energies of nature. Fame, which they, nevertheless, enjoyed without arrogance, presumption, or conceit, was the only incitement to the noblest exertions. The same effects we may, perhaps, perceive as the consequence of a valuable and respected institution, unexampled among the antients, which forms a lyceum in the retirements of each individual, and excites to the emulation of glory, secure from the danger of vicious example, an honour to the founders, a future blessing to the grateful world.

We have now examined the respective merits of the antients and moderns ; in some of the most striking sciences and arts, to have traced each branch of literature, and to have noted the excellencies and defects of every classical writer, would have lengthened, beyond all moderation, the present effort, already too much extended. We have pursued a plan more calculated to entertain ; and instead of a dry, exact, and tedious parallel, have given a general view of the various ramifications of knowledge. However enlarged and precise our acquaintance with literature ; however beautiful and numerous our attainments in poetry and history ; let us consider the amazing, and original powers of the

the antients, and all must acquiesce in this decision in their favour. However extensive, therefore, our discoveries in science, whatever in number, or in value, our improvements and inventions, let not pride or superciliousness pollute the praise and admiration our merits may deserve, merits which we owe to the infant and original productions of the illustrious antients; let us rather recollect that our acquirements have proved of little utility, if they have not corrected our passions and prejudices, if they have not endowed us with generosity, liberality, and gratitude.

PRIZE TRANSLATION,

By Master GEORGE LAWSON, aged 13.

Of the Rev. Mr. Blanchard's Academy, Nottingham.

THUS it may be evidently known, and can be determined by the understanding, that there is in the minds of men an incredible celerity, by the power of which, they will not only run over in a minute, but also can consider and re-consider with ease, those things which the body could not accomplish in months, or even years. If that appears extraordinary, why is it not thought more wonderful that the mind can preserve so many transactions and innumerable exploits, performed many years ago? like God, it can anticipate things future, take a retrospect of the past, and examine the present. Who can doubt when he knows this, that the mind is divine; and that he himself is immortal, for every thing divine must be eternal? from two things especially, which are peculiar to the mind, the eternity of it may be easily proved. These are the beginning, and perpetuity of its motion, for its principal motion is not borrowed, like other things, from some other source: and the perpetuity of its motion is never diminished so long as it is in the body; nay, when the body sleeps, the mind is not inactive; which clearly proves that it is divine and immortal. Reason tells us that it is eternal, and the event of things will also prove it to be so. For the mind is a certain part of God

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himself;

himself; and if God enjoys immortality, how can he wish any part which is taken from him to be mortal? But he thought that this of itself indicates an extraordinary, glorious, and divine power, because not he alone is immortal, but also those whom he wishes, he can make partakers of his nature, and consequently immortal. He has decreed that the body be mortal, and not undeservedly, being taken from the earth, whose nature is subject to change, and ought to return to dust, when worn out by the fatigues of life. But the mind proceeding from God seeks heaven: for it always wishes to return to that place from whence it came: the earth, if sought for by either, must be sought for by the body; but the soul looks up to heaven; and heaven, if souls never originated from the earth, must be its suitable clime.

ARITHMETICAL PRIZE SOLUTIONS.

THE number of excellent answers to this question has given us great pleasure, and if out of between sixty and seventy there have been a few failures, even in those answers great praise is to be bestowed on the industry of the candidate. We are sorry that our limits do not permit us to publish a greater number of answers; but we shall state the general result. The answer of Master RIDLEY here follows, exactly as sent to us:

To find each amount of the three debts will be the same as to find each amount of three different annuities, forborne five years, viz. one of 208l. at four per cent, another of 418l. at four and a half per cent, and another of 525l. at five per cent.

By Mair's Arithmetic, sixth edition, page 540, rule 1st, $5.4163226 \times 208 = 1126.5951008$ l., the first debt at the end of five years; and $5.4707097 \times 418 = 2286.7566546$ l. the second debt at the end of ten years; also $5.5256312 \times 525 = 2900.95638$ l., the third debt at fifteen years end.

To

To know how much of the first debt will remain due at the end of ten years, find what annuity would discharge it in five years, which, by rule 4, page 541, will be $\frac{1126.5951008}{4.4518223} =$

253.0638l.; had this been deducted the latter end of each year for five years, the debt would have been paid off: but as he only paid 200l. at the beginning of each year, which (with the interest at four per cent) was equal to 208l. at the latter end, therefore he fell 45.0638l. short yearly. In five years this would amount to $5.4163226 \times 45.0638 =$ 244.080078l.

At the beginning of the eleventh year he applied 300l. annually to the reduction of his debts, wherefore 244.080078l. will be discharged, and 55.919922 over, which must be subtracted from 2286.756654, and the remainder 2230.836732l. is the second debt at the beginning of the eleventh year, which, with interest at the end of the same year, will amount to 2331.224384l. The annuity that would pay this in four years (for there is only that time to run) will be $\frac{2331.224384}{3.5875257} =$ 649.814l. Yet he only applied 313.5l.

(the amount of 300l. for a year), therefore the deficiency annually is 336.314l., which, in four years, amounts to $4.2781911 \times 336.314 =$ 1438.81556l., the second debt at the end of fifteen years. This being added to 2900.95638, the third debt, no part of which has been paid, gives 4339.77194l. for the whole debt.

From £. 14000, what the estate sold for,

Take 4339.77194, the whole debt,

The remainder 9660.22806 is the sum left after the debts are paid, which is to be divided in the proportion of

1. 1. 1. 1. 1. 2. Whence $\frac{9660.22806l.}{7} =$

1380.03258l. each child's portion, and 2760.06516l. the mother's.

Master COHEN gave the same result, which he extended to twenty-nine places of decimals, as did Master PARRY.

Master GROB carried it on to twenty-eight places. Master SEWEL solved the question very elegantly, though he did not extend his result to the decimal of a farthing. Miss F. M. STEPHENS' solution we here publish, as if it does not contain such operose calculations as many of the others, the mode of solution does her great credit.

First, 200*l.* borrowed yearly for five years, at four per cent. per annum, compound interest, will amount to 1126*l.* 11*s.* 10 $\frac{3}{4}$ *d.*

Second, 400*l.* for the same time, at four and a half per cent. per annum, will amount to 2286*l.* 15*s.* 1 $\frac{1}{2}$ *d.*

Third, 500*l.* upon the same conditions, for five years, at five per cent. annum, will amount to 2900*l.* 19*s.* 1 $\frac{1}{2}$ *d.*

But (by the question) during the five years he borrowed the 400*l.* he applied 200*l.* annually to the payment of the old debts, in the order in which they were contracted, which being calculated (by compound interest) there will remain a balance of 244*l.* 1*s.* 7*d.* old debt, at the end of the tenth year.

For the next five years he borrowed 500*l.* and paid yearly 300*l.* to the reduction of his oldest debts, of which, upon calculation, there will remain a balance of 1438*l.* 16*s.* 3 $\frac{3}{4}$ *d.* second debt, which added to 2900*l.* 19*s.* 1 $\frac{1}{2}$ *d.*, his debt, when he died, will be found to be 4339*l.* 15*s.* 5*d.* from thence the wife's share will be found to be 2760*l.* 1*s.* 3*d.* five-sevenths, and each child 1380*l.* 0*s.* 7*d.* six-sevenths.

The answers in general calculated year by year the state of the gentleman's debt, and deducted the result at the end of fifteen years from the value of the estate, at fourteen years purchase. The remainder was then divided in the proportion required by the question.

GENERAL ADJUDICATION OF THE PRIZES

GIVEN WITH THE SIXTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

GRAND CONTEST.

“What are the respective merits of the antients and moderns in science and literature? In what arts and sciences, and in what branches of literature did the antients particularly excel, and in what are the moderns superior to them?”

In such a contest it is not to be supposed that our candidates would be numerous. Many of the successful writers in the Preceptor are above the specified age; and some, it is presumed, have entered upon employments which may afford but little leisure for engaging in such an enquiry. It is a high satisfaction to us, however, to find, that if the compositions which have been forwarded to us on this occasion were few, that circumstance is amply compensated by their merit and excellence; and indeed several of them (if our limits permitted them to be printed) would reflect no discredit on any press.

The first prize has been awarded to Master D. PARKEN, of Dunstable, aged 15. Attested by his father.

To receive Books, value Three Guineas.

The second to Miss JANE LEWIS, of North Baddesley, aged 15. Attested by her governess, Mrs. Elderton.

To receive a Silver Medal, value Half-a-guinea.

The third to Miss ELIZ. PARKER, of Mettingham, aged 15. Attested by her father and sister.

To receive Irvine's Elements of English Composition.

The fourth to Master AARON ASHER GOLDSMID, of Goodman's-fields, aged 15. Attested by his father and Dr. Montucci.

To receive Dr. Gregory's Elements of a Polite Education.

The fifth to Master R. V. YATES, of the Rev. Mr. Corrie's academy, Birmingham, aged 15. Attested by Mr. Corrie.

To receive Dr. Mavor's Plutarch.

The

The sixth to Master JOSEPH DENNISON, of Liverpool, aged 15. Attested by M. Baitton.

To receive Pratt's and Mavor's Classical English Poetry.

The seventh to Miss ELIZA SINCLAIRE, at Dr. Gregory's, Low Leyton, aged 15. Attested by Mrs. Gregory.

To receive Irvine's Elements of English Composition.

The eighth to Miss MARIA JANE WALDIE, of Newcastle, aged 15. Attested by her mother.

To receive Dr. Gregory's Polite Education.

The ninth to Master HENRY WALTER, of Brigg School, aged 15. Attested by Mr. Walter, head master.

To receive Irvine's Elements of English Composition.

The tenth to Master G. R. COOPER WILCOCKE, of Mess. Palmer's school, Hackney, aged 14. Attested by Mr. Palmer.

To receive Goldsmith's History of England.

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND SUBJECT.

TRANSLATION FROM THE LATIN.

The first prize has been awarded to Master G. LAWSON, of Mr. Blanchard's academy, Nottingham, aged 13. Attested by the Rev. Mr. Hallifax, classical assistant.

To receive a Cabinet Library, value two guineas.

The second to Master JOHN GREGORY, of Mess. Palmer's school, Hackney, aged 12 years and seven months. Attested by Mr. Palmer.

To receive a silver medal, value half-a-guinea.

The third to Master H. LUCAS, of the academy at Gosport, not 14. Attested by the Rev. Mr. Cumyns, classical assistant.

To receive Dr. Mavor's Natural History.

The fourth to Master W. TYLER HEATH, of Mr. Blanchard's academy, Nottingham, not 14. Attested by Mr. Hallifax, classical assistant.

To receive Dr. Gregory's Elements of a Polite Education.

The fifth to Master CHARLES RUSS, of the academy Castle Cary, (provided an attestation is received specifying his age, &c.)

To receive Goldsmith's History of England.

The

The sixth to Master G. F. DICKSON, of Mr. Palmer's school, Hackney, not 14. Attested by Mr. Paris, classical tutor.

To receive Dr. Mavor's Plutarch.

The seventh to Master SAMUEL PRICE, of Newport, Isle of Wight, aged not 14. Attested by Mr. Potticary, classical assistant.

To receive Dr. Mavor's British Nepos.

The eighth to Master W. BEDDOME, of Mr. Palmer's school, Hackney, aged 13. Attested by Mr. Palmer.

To receive Pratt's and Mavor's Classical English Poetry.

The following are deserving of COMMENDATION:

Master *Henry Biden*, aged 13, of Mr. Newby's academy, Barningham, Yorkshire

Master *Richard Wilson Brown*, under the prescribed age, pupil of Mr. J. Potticary, Newport, Isle of Wight

Master *John Clark*, aged 13 years and 11 months, of Barnard Castle School

Master *W. Mills*, aged 13, of Buntingford School

Master *William Sheepbanks*, above 10, of ditto

Master *Backbell Lane Sandham*, aged 13 years and 10 months, private pupil of Mr. T. Martin, surgeon, Pulboro', Sussex

Master *Richard Steele*, aged 13 years and seven months, of the grammar school, Barnard Castle

Master *George Watson*, aged 13 years and four months, of ditto

Master *John Pearson Wood*, aged 12 years and 10 months, of Barnard Castle School

Master *John Wright*, aged 12 years and two months, of King-street, Norwich

CLASS III.

ADJUDICATION OF THE ARITHMETICAL QUESTION.

The first prize is adjudged to Master THOMAS RIDLEY, aged 14 years and three months, of Mr. Newby's academy, Barningham, Yorkshire. Attested by Mr. Newby.

To receive Books, value two guineas.

The second prize is adjudged to Master FRANCIS COHEN, under 13, of Southampton-street, Bloomsbury, private pupil of Mr. Wells, who has signed the attestation.

To receive Dr. Mavor's Natural History.

The third prize is adjudged to Master JOHN ERNOT GROB, aged 14, of Kentish-town. Attested by Mr. Wills.

To receive Dr. Mavor's Lives of Plutarch abridged.

The fourth prize is adjudged to Master SAMUEL PERRY, of Whittle Academy, under 16. Attested by Mr. Hillyard, the master.

To receive Dr. Mavor's British Nepos.

The

The fifth prize is adjudged to Master W. NIGHTINGALE, of Salford, Manchester, under 14. Attested by his father.

To receive Irvine's Elements of English Composition.

The three next prizes are adjudged to Master S. WRIGHT, of Englefield-house; Master G. WILDSMITH, of Mr. Abraham's academy, Milk-Street, Sheffield; and Miss MARY PARKEN, of Dunstable.

To receive Books, value five shillings each.

We must mention with great applause the efforts of Masters T. H. Bell, J. Hurst, of Barnard Castle; Masters Ellis, Howe, J. Bradbury, of Sheffield; Masters F. Littlewood, B. Duckham, C. Gladstauris, J. Andrews, W. G. Oldfield, W. Irving, Miss Rebecca Preston, of Sheffield; Masters J. Atkinson, of Barnard Castle; H. Lucas, of Gosport; W. T. Olliver, of Sheffield; R. Lamb, of Barningham; J. Eadon, of Sheffield; J. Pike, and E. and H. Monk, of Woburn; J. Butler, of Kirby-house, near Newbury; J. Nicholson, of Firth house; R. Philpott, of Barningham; J. Searle, of Old Hayes, Sidmouth.

From Masters G. Pawle, J. Middleton, W. Barnes, W. Page, T. Hoare, G. Elliot, W. J. Smith, E. Robinson, H. Green, J. B. Briggs, W. Thompson, R. Hodgson, we shall expect much in future.

The excellent solutions of Masters W. Sewell, under 15 years of age; of G. F. Dickson, and R. W. Nanton, and of Miss C. S. Peyton, would have been distinguished by prizes, if our number had not been limited to eight; but these solutions were within the first twenty.

NEW PRIZE SUBJECTS FOR No. XIX.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of August.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

The character of Julius Cæsar impartially considered, as an orator, a statesman, and a general; also his virtues and vices, either as a patriot, or an enemy to his country, and the liberties of mankind.

The best essay to entitle the writer to Books, value three guineas; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS

CLASS II.

TRANSLATION FROM THE FRENCH.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT
COMPLETED THEIR THIRTEENTH YEAR.

THE STORY OF PATKUL FROM VOLTAIRE'S CHARLES XII.

La Livonie, la plus belle & la plus fertile Province du Nord, avait appartenu autrefois aux Chevaliers de l'Ordre Teutonique. Les Russes, les Polonais & les Suédois s'en étaient disputé la possession. La Suède l'avait enlevée depuis près de cent années, & elle lui avait été enfin cédée solennellement par la paix d'Oliva.

Le feu Roi Charles XI, dans ses sévérités pour ses Sujets, n'avait pas épargné les Livoniens. Il les avait dépouillés de leurs privilèges, & d'une partie de leur patrimoine. Patkul, malheureusement célèbre depuis par sa mort tragique, fut député de la Noblesse Livonienne pour porter au trône les plaintes de la Province. Il fit à son Maître une harangue respectueuse, mais forte, & pleine de cette éloquence mâle que donne la calamité, quand elle est jointe à la hardiesse. Mais les Rois ne regardent trop souvent ces harangues publiques, que comme des cérémonies vaines qu'il est d'usage de souffrir, sans y faire attention. Toutefois Charles XI. dissimulé quand il ne se livrait pas aux emportemens de sa colère, frappa doucement, sur l'épaule de Patkul : *Vous avez parlé pour votre patrie en brave homme*, lui dit-il, *je vous en estime, continuez*. Mais, peu de jours après, il le fit déclarer coupable de lèse-Majesté, & comme tel, condamner à la mort. Patkul, qui s'était caché, prit la fuite. Il porta dans la Pologne ses ressentimens. Il fut admis depuis devant le Roi Auguste. Charles XI. était mort ; mais la sentence de Patkul & son indignation subsistaient.

Il fallut qu'Auguste ordonnât lui-même à tous ses Officiers de magistrature, de ne plus le qualifier de Roi de Pologne, & qu'il fît effacer des prières publiques ce titre auquel il renonçait. Il eut moins de peine à élargir les Sobiesky : ces Princes, au sortir de leur prison, refusèrent de le voir ; mais le sacrifice de Patkul fut ce qui dut lui coûter davantage. D'un côté le Czar le redemandait hautement comme son Ambassadeur ; de l'autre le Roi de Suède exigeait, en menaçant, qu'on le lui livrât. Patkul était alors enfermé dans le château de Kœnigstein en Saxe. Le Roi Auguste crut pouvoir satisfaire Charles XII. & son honneur en même temps. Il envoya des gardes pour livrer ce malheureux aux troupes Suédoises ; mais auparavant il envoya au Gouverneur de Kœnigstein un ordre secret de laisser échapper son prisonnier. La mauvaise fortune de Patkul l'emporta sur le soin qu'on prenait de le sauver. Le Gouverneur, sachant que Patkul était très riche, voulut lui faire acheter sa liberté. Le prisonnier, comptant encore sur le Droit des Gens, & informé des intentions du Roi Auguste, refusa de payer ce qu'il pensait devoir obtenir pour rien. Pendant cet intervalle les gardes commandés pour saisir le prisonnier arrivèrent, & le livrèrent immédiatement à quatre Capitaines Suédois, qui l'emmenèrent d'abord au quartier général d'Altranstäd, où il demeura trois mois
attaché

attaché à un poteau avec une grosse chaîne de fer. De-là il fut conduit à C. s'imir.

Charles XII. oubliant que Patkul était Ambassadeur du Czar, & se souvenant seulement qu'il était né son sujet, ordonna au Conseil de guerre de le juger avec la dernière rigueur. Il fut condamné à être rompu vif, & à être mis en quartiers. Un Chapelain vint lui annoncer qu'il fallait mourir, sans lui apprendre le genre du supplice. Alors cet homme, qui avait bravé la mort dans tant de batailles, se trouvant seul avec un Prêtre, & son courage n'étant plus soutenu par la gloire, ni par la colère, sources de l'intrépidité des hommes, répandit amèrement des larmes dans le sein du Chapelain. Il était fiancé avec une Dame Saxonne nommée Madame d'Einsiedel, qui avait de la naissance, du mérite & de la beauté, & qu'il avait compté d'épouser à-peu près dans le temps même qu'on le livra au supplice. Il recommanda au Chapelain d'aller la trouver pour la consoler, & de l'assurer qu'il mourait plein de tendresse pour elle. Quand on l'eut conduit au lieu du supplice, & qu'il vit les roues & les pieux dressés, il tomba dans des convulsions de frayeur, & se rejetta dans les bras du Ministre, qui l'embrassa en le couvrant de son manteau, & en pleurant. Alors un Officier Suédois lut à haute voix un papier dans lequel étaient ces paroles :

“ On fait savoir que l'ordre très exprès de Sa Majesté, notre Seigneur très-clément, est, que cet homme qui est traître à la patrie, soit roué & écartelé, pour réparation de ses crimes, & pour l'exemple des autres. Que chacun se donne de garde de la trahison, & serve son Roi fidèlement.” A ces mots de *Prince très-clément* : Quelle clémence ! dit Patkul ; & à ceux de *traître à la patrie* : Hélas ! dit-il, je l'ai trop bien servie. Il reçut seize coups, & souffrit le supplice le plus long & le plus affreux qu'on puisse imaginer. Ainsi périt l'infortuné Jeun Rainold Patkul, Ambassadeur & Général de l'Empereur de Russie.

Ceux qui ne voyaient en lui qu'un sujet révolté contre son Roi, disaient qu'il avait mérité la mort ; ceux qui le regardaient comme un Livonien, né dans une Province, laquelle avait des privilèges à défendre, & qui se souvenaient qu'il n'était sorti de la Livonie que pour en avoir soutenu les droits, l'appelaient le martyr de la liberté de son pays. Tous convenaient d'ailleurs que le titre d'Ambassadeur du Czar devait rendre sa personne sacrée. Le seul Roi de Suède, élevé dans les principes du despotisme, crut n'avoir fait qu'un acte de justice, tandis que toute l'Europe condamnait sa cruauté.

Ses membres, coupés en quartiers, restèrent exposés sur des poteaux jusqu'en 1713, qu'Auguste étant remonté sur son trône, fit rassembler ces témoignages de la nécessité où il avait été réduit à Altranstad : on les lui apporta à Varsovie dans une cassette, en présence de Buzenval, Envoyé de France. Le Roi de Pologne montrant la cassette à ce Ministre : Voilà, lui dit-il simplement, les membres de Patkul, sans rien ajouter pour blâmer ou pour plaindre sa mémoire, & sans que personne de ceux qui étaient présents, osât parler sur un sujet si délicat & si triste.

The best translation to be entitled to a Cabinet Library, value two guineas ; the seven next best to books, value five shillings each.

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JUVENILE ENCYCLOPEDIA.

LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XVII.

OF THE LAWS OF MOTION.

EVERY thing in mechanics depends upon very simple principles, and may be resolved ultimately into the power of gravity and the laws of motion.

In treating of gravitation, in our second lecture, it was shewn to be that kind of attraction which subsists between the mass of the earth and all those bodies which are on its surface. It is that which, in the stated revolutions of this planet, prevents us, and all the bodies which surround us, from falling into infinite space; and which draws so forcibly every thing whatever towards the center of the earth.

That this attraction is greater or less at different distances is generally allowed; a body which at one semidiameter of the earth weighs one pound, will have four times less weight at two semidiameters, and nine times less at three. At small distances, however, we are not sensible of this difference in weight, for though we could be elevated a mile above the earth's surface, when we consider that its diameter is eight thousand miles, we shall easily see that the small difference which this would produce is scarcely to be estimated.

Falling bodies, however we know, acquire an accelerated or increased force, according to the height from which they fall; but this must be accounted for from different principles. Every man is sensible that the fall of a stone is to be dreaded in

proportion to the height from which it descends. If it falls from only a foot above his head, it is not likely to be so fatal as if it fell from the parapet of a high house. The falling body, therefore, must of necessity acquire an increase of velocity in its descent; and, in fact, it is said that a leaden bullet let fall from one of the steeples of Westminster Abbey acquired velocity sufficient to pierce through a deal board.

This effect must therefore be referred to the first law of motion, as laid down by Sir Isaac Newton, which is, that "all bodies are indifferent to motion and rest: in other words, a body at rest will continue in that state, unless put in motion by some external impulse; and a body in motion will continue that motion for ever, unless stopped by some external obstruction." This property of matter is termed, in the technical language of philosophy, its *vis inertiae*.

To apply this to the case immediately in point, it is evident that the bullet which is dropped from the steeple of Westminster Abbey, having, by the power of gravity, once acquired a certain degree of motion, would continue to fall by the motion it had received by the first impulse, even if the cause was to cease. For instance, if when it had fallen half way it was possible to deprive it of gravity, it would still, by the above law, continue its motion, and in the direction in which it was sent, as a stone continues to go on, when thrown by the hand, without any new impulse. The power of gravity, however, does not cease, and therefore every inch the bullet falls it receives an increase of motion. Thus if in the space of one second it falls one pole (sixteen feet and a half), it will then have acquired as much swiftness or velocity as will carry it through three poles in the next second, through five in the third, through seven in the fourth, and nine in the fifth. This will account for its accelerated motion, and for the increased force with which it falls near the bottom. Thus the time which bodies take in falling is easily calculated, for if they fall about one pole in the first second, which is what they nearly do by the force of gravity, they will then fall three in the next, and in five seconds they will fall about twenty-five poles, or three hundred feet. If there was no resistance from the air, the velocity

city of falling bodies would be still greater; and as water is a medium more dense than air the resistance must be greater, and the motion of a body falling in water proportionably slower.

The same principle holds with respect to projected bodies. "It seems a bold assertion," says Mr. Walker; "to say that a cannon, discharged horizontally on the top of a tall tower, shall throw a ball two miles distant; and that it shall strike a level plain, or the ground, at the same instant that another ball, let fall from the muzzle of the gun (the moment of its discharge), shall strike it! But there is no doubt of the fact; for though the projected ball may move point blank (and bid defiance to the power of gravity half its way), it will perform *that half* in so short a space of time, that it will fall a rod in the first second, three rods in the second, &c. like all other falling bodies; for an horizontal impulse retards not the power of gravity, in respect to time."

As heavy bodies are uniformly accelerated in their descent, they are as uniformly retarded by the power of gravity in their ascent. Thus if I was to throw the bullet up to the steeple of Westminster Abbey, I must give it just as much force as it acquired in its descent. Thus the body D in rolling down the inclined plane AB (fig. 1, in the last No.), will acquire sufficient velocity by the time it arrives at B to carry it up nearly to C; and if the plane was perfectly smooth, and the air gave no resistance, it would carry it up quite to that point: it is upon this principle the *pendulum* is constructed. You all know, I conceive, that a pendulum consists of a bob or ball fixed to a small string or wire. If therefore the bob (fig. 2) is let go at *a*, it will fall to *d*, and by the velocity it acquires in the fall it will rise to *c*: this is called an oscillation; and if a pendulum was put in motion in a space quite void of air, and free from all resistance from friction on the point of suspension, it would move for ever. Pendulums vibrate in proportion to their lengths, and the vibrations of the same pendulum are always performed in the same space of time. Hence their great utility in measuring time, for a pendulum of thirty-nine inches one-fifth, will vibrate an aliquot part of the time the earth is turning on

its axis, that is, 1-86400th part, or sixty times in a minute. Near the equator, however, pendulums move slower than near the poles; and they are also subject to variations and irregularities from heat and cold, which causes the metals, of which the rods are usually formed, to lengthen or contract.

It is from this sluggishness of motion, which is called the *vis inertiae* of bodies, that there proceeds a something like an *endeavour* in all bodies to preserve that state in which they are, when at rest to continue in a state of rest, and when in motion to continue in motion. This position may seem abstruse, but it will admit of illustration by the most common facts. If I push a bowl of water with my hand, the water flies over the edge upon my hand, for it endeavours to continue in the state of rest in which it was. But if I take the bowl in my hand, and run away with it, and suddenly stop short, the water flies forward the way I was running from its *vis inertiae*, or tendency to continue in the same state of motion. In the same manner, if sitting in the front of a carriage, which, after going very fast, stops suddenly, I am jolted from my seat, my head will drive through the front glass of the carriage.

It is a plain and obvious principle, that the greater the quantity of matter is which any body contains, the greater will be its *vis inertiae*. The heavier any body is, the greater is the power which is required, either to set it in motion or to stop it. On the other hand, the swifter any body moves the greater is its force, as was sufficiently exemplified in the case of a bullet, which was supposed to fall from the steeple of Westminster Abbey. But to make the matter still plainer, if the roller *a* (fig. 3) leans against the obstacle *b*, it will be found incapable of overturning it; but if *a* is taken up to *c*, and suffered to roll down the inclined plane against *b*, it will overturn it instantly. It is plain, therefore, that by its continued motion the roller *a* has acquired a force which it had not in itself. The stroke which *a* strikes at *b* is called its momentum. Hence results the well-known maxim in philosophy, which I have before had occasion to repeat to you—"That the whole momentum, or quantity of force, of any moving body, is estimated by the quantity of matter multiplied

multiplied by the velocity or swiftness with which it moves." When the products, therefore, arising from multiplying the quantity of matter in any two bodies, by their respective velocities are equal, we say their momenta, or moving forces, are the same. Thus if a body, which I call A, weighs forty pounds, and moves at the rate of two miles in a minute; and another body, which I call B, weighs only four pounds, and moves at the rate of twenty miles in a minute, the entire force with which these two bodies will strike each other would be equal, and each of them would require an equal force* to stop it. For forty multiplied by ~~four~~^{two} gives eighty, the force of A; and twenty multiplied by four is eighty, the force of B.

Upon this easy principle depends the whole of mechanics: and it holds universally true, that when two bodies are suspended on any machine, so as to act contrary to each other; if the machine is put into motion, and the perpendicular ascent of one body multiplied into its weight is equal to the perpendicular descent of the other body multiplied into its weight, those bodies, how unequal soever in their weights, will balance one another in all situations: for as the whole ascent of one is performed in the same time with the whole descent of the other, their respective velocities must be directly as the spaces they move through; and the excess of weight in one body is compensated by the excess of velocity in the other. Upon this principle it is easy to compute the power of any mechanical engine, whether simple or compound; for it is but only finding how much swifter the power moves than the weight does (i. e. how much farther in the same time) and just so much is the power increased by the help of the engine.

The second law of motion laid down by Sir Isaac Newton is—"That the alteration of the state of any body from rest to motion, or from one motion to another, is always in proportion to the force which is impressed, and in the direction of that force."

All motion is naturally rectilinear. A bullet projected by the hand, or shot from a cannon, would for ever continue to move in the same direction it received at first, if no other power diverted its course. Therefore when we see a body

move in a curve of any kind whatever, we conclude it must be acted upon by two powers at least; one putting it in motion, and another drawing it off from the rectilinear course it would otherwise have continued to move in: and whenever that power, which bent the motion of the body from a straight line into a curve, ceases to act, the body will again move on in a straight line touching that point of the curve in which it was when the action of that power ceased. For example, a pebble moved round in a sling ever so long a time, will fly off the moment it is set at liberty, by slipping one end of the sling cord: and will go on in a line touching the circle it described before; which line would actually be a straight one, if the earth's attraction did not affect the pebble, and bring it down to the ground. This shews that the natural tendency of the pebble, when put into motion, is to continue moving in a straight line, although by the force that moves the sling it is made to revolve in a circle.

From this maxim it will evidently appear, that when two forces act at once upon the same body, in different directions, it will go in neither, but in a course between both. If the billiard ball *a* (fig. 4) is struck at once by the two cues *b* and *c*, it will be impelled forward in the diagonal or middle line, whereas *b* would have impelled it in the line *e*, and *c* in the line *d*.

Or if a boat (fig. 5) is drawn up the stream by two men on the opposite banks, it will follow the direction of neither exactly, but will proceed directly in the middle of the stream.

Suppose again (fig. 6) the body *A* to represent a ship at sea; and that it is driven by the wind, in the right line *AB*, with such a force as would carry it uniformly from *A* to *B* in a minute: then suppose a stream or current of water running in the direction *AD*, with such a force as would carry the ship through an equal space from *A* to *D* in a minute. By these two forces, acting together at right angles to each other, the ship will describe the line *AEC* in a minute; which line (because the forces are equal and perpendicular to each other) will be the diagonal of an exact square.

If the acting forces are equal, but at oblique angles to each

each other, so will the sides of the parallelogram be: and the diagonal run through by the moving body will be longer or shorter, according as the obliquity is greater or smaller. Thus, if two equal forces act conjointly upon the body A, (fig. 7) one having a tendency to move it through the space AB in the same time that the other has a tendency to move it through an equal space AD; it will describe the diagonal AGC in the same time that either of the single forces would have caused it to describe either of the sides. If one of the forces is greater than the other, then one side of the parallelogram will be so much longer than the other. For if one force singly would carry the body through the space AE, in the same time that the other would have carried it through the space AD, the joint action of both will carry it in the same time through the space AHF, which is the diagonal of the oblique parallelogram ADEF.

If both forces act upon the body in such a manner, as to move it uniformly, the diagonal described will be a straight line, but if one of the forces acts in such a manner as to make the body move faster and faster, then the line described will be a curve. And this is the case of all bodies which are projected in rectilinear directions, and at the same time acted upon by the power of gravity, which has a constant tendency to accelerate their motions in the direction wherein it acts.

This last is an observation of great importance, as it is the foundation of the beautiful system of Newton concerning the planetary motions. The force which impels these bodies forward in a rectilinear direction, is called the centrifugal force, as driving them from the center; and the force which draws it towards the center, or the power of gravity, is called the centripetal force. Thus if the body A (fig. 8) is projected along the straight line AFH in open space, where it meets with no resistance, and is not drawn aside by any power, it will go on for ever with the same velocity, and in the same direction. But if, at the same moment, the projectile force is given it at A, the body S begins to attract it with a force duly adjusted,* and perpendicular to its motion

* To make the projectile force a just balance to the gravitating power,

at A, it will then be drawn from the straight line AFH, and forced to revolve about S in the circle ATW; in the same manner, and by the same law, that a pebble is moved round in a sling. And if, when the body is in any part of its orbit (as suppose at K) a smaller body as L, within the sphere of attraction of the body K, is projected in the right line LM, with a force duly adjusted, and perpendicular to the line of attraction LK; then the small body L will revolve about the large body K in the orbit NO, and accompany it in its whole course round the yet larger body S. But then the body K will no longer move in the circle ATW; for that circle will now be described by the common center of gravity between K and L. Nay, even the great body S will not keep in the center; for it will be the common center of gravity between all the three bodies S, K, and L, that will remain immoveable there. So if we suppose S and K connected by a wire P that has no weight, and K and L connected by a wire q that has no weight, the common center of gravity of all these three bodies will be a point in the wire P near S; which point being supported, the bodies will be all in equilibrio as they move round it. Though indeed, strictly speaking, the common center of gravity of all the three bodies will not be in the wire P but when these bodies are all in the right line. Here S may represent the sun, K the earth, and L the moon. But of this we shall treat more at large in the lectures on astronomy.

These principles will serve to explain many facts which will fall from time to time under your observation. Thus if a leaden ball is dropt from the mast-head of a ship, under swift sail, one would think before the ball would reach the deck the ship would be slid from under it, and that it would fall behind the ship into the sea. This is not the fact; for the ball falls down by the side of the mast, as if the ship was at anchor. Why? Because the ball is under the influence of two forces; one horizontal, by the motion of the ship; the other perpendicular, by the power of gravity: so that

power, so as to keep the planet moving in a circle, it must give such a velocity as the planet would acquire by gravity, when it had fallen through half the semidiameter of that circle.

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though it appears to fall perpendicular, it does not, but describes, in space, the same kind of semi-parabola as the ball shot from a gun.

If I throw a log of wood into the Thames, when the wind is across the river, the log will not obey the current, by going down the river, nor the wind, by going across the river, but a sloping direction made up of the two.

The third law is, that "re-action is always equal to action." In other words, the resistance of a body at rest, which is acted or pressed upon, acts against a moving body with a certain degree of power, and produces the same effects as an active force would have done in the same direction. Thus, if I strike an anvil with a hammer, the anvil strikes the hammer with the same force with which it is struck itself. Hence a common trick in the country, of a man lying on the ground with a large anvil on his breast, and suffering a strong man to strike it with a sledge hammer with all his might. If the anvil is very large, its *vis inertiae* resists the force of the blow, and the man is perfectly safe. If the anvil was very small, only the weight of a pound or two, the first stroke would kill the man.

A pretty experiment of Mr. Walker's will serve also to illustrate this part of the subject. "Let *a* be a little cannon, (fig. 9) and *b* a hollow piece of iron or brass, to slip on pretty tight upon *cc*, and of the same weight as *a*. Now if half a thimblefull of gunpowder is put in *a*, and *b* shut upon it, both being suspended by strings; if the powder is fired, the parts *a* and *b* will be thrown equally distant from *r*, the center where they hung; shewing the re-action to be equal to the action. Hence an heavy gun seems to recoil less than a light one, on account of its greater *vis inertiae*; otherwise its re-action is the same, with the same charge."

Hence it is evident, that when a load is drawn by a horse, the load acts against the motion of the horse, and the action of the animal is as much impeded by the load, as the motion of the load is promoted by his efforts.

Before I proceed to the consideration of the six mechanic powers, it is necessary to say a few words on what is called the *center of gravity*.

The center of gravity is that point of a body in which the

the whole force of its gravity or weight is united. What-
ever, therefore, supports that point, bears, in fact, the weight
of the whole body; and while it is supported the body cannot
fall, because all its parts are in perfect equilibrium about
that point. Thus, if I endeavour to balance my cane, by
laying it across upon my finger, after some time I find a
place where neither end will preponderate. The part, then,
which rests upon my finger is the center of gravity. An
imaginary line drawn from the center of gravity of any body
towards the center of the earth, is called the *line of direction*,
and it is in this line all heavy bodies will descend.

The difficulty of sustaining a tall body upon a narrow
foundation will be evident, if you attempt to balance your
cane with its small end upon your finger. Its center of gra-
vity is somewhere about the middle of the cane, and unless
you have sufficient dexterity to keep the foundation on your
finger perpendicular under the center of gravity it will un-
doubtedly fall. In this consists the great difficulty of posture
masters and rope dancers. The dancer on the rope balances
himself by a long pole loaded with lead, and keeps his eye
steadily on some point exactly parallel to the rope, by which
he can see whether his center of gravity is either on one side
or the other of his slippery foundation, and if any irregularity
takes place he rectifies it by his balancing pole.

All bodies stand firm on their bases, when the line of di-
rection falls within the base; for in this case the body can-
not be made to fall, without first raising the center of gra-
vity higher than it was before. Thus, the inclining body
ABCD, (fig. 10) whose center of gravity is E, stands firmly
on its base CDIK, because the line of direction EF falls
within the base. But if a weight, as ABGH, is laid upon
the top of the body, the center of gravity of the whole body
and weight together is raised up to I; and then, as the
line of direction ID falls without the base at D, the center of
gravity I is not supported; and the whole body and weight
tumble down together.

As a practical illustration of this, I shall mention that the
tower of Pisa (fig. 11) leans sixteen feet out of the perpen-
dicular, and strangers are consequently afraid to pass under
it. If, however, the materials will hold together, there is
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no necessity for any such apprehension. For if the plummet *c* is let fall from its center of gravity, you will see that the line of direction is within its base or foundation, and therefore it has stood without a miracle these three hundred years.

The nearer the center of gravity and the line of direction coincide, the firmer any body stands upon a horizontal plane. If the plane is inclined a body will slide down it, if the line of direction falls within the base; but it will tumble down when that line falls without the base. Thus the body *A* (fig. 12) slides down the inclined plane *CD*, while the body *B* rolls down upon it.

The broader the base the firmer any body stands; thus you find you stand firmer with your feet a little asunder than when close together; and in the former case it will require a much greater force to push you down. Whenever the line of direction, however, falls without the base of our feet, we necessarily fall; "and it is not only pleasing," adds Mr. Ferguson, "but even surprising, to reflect upon the various and unthought-of methods and postures which we use to retain this position, or to recover it when it is lost. For this purpose we bend our body forward when we rise from a chair, or when we go up stairs: and for this purpose a man leans forward when he carries a burden on his back, and backwards when he carries it on his breast; and to the right or left side as he carries it on the opposite side. A thousand more instances might be added.

NATURAL HISTORY.

WE come now to a very singular genus of animals, which the Swedish naturalist has classed under the order of *Bellua*, that is,

THE WAIRUS.

It has two great tusks in the upper jaw, pointing downwards; four grinders on both sides, above and below; no cutting teeth; five palmated toes on each foot.

This

This genus contains only two species; the Arctic and the Indian.

I.—THE ARCTIC WALRUS,

Called also the morse, sea-horse, and sea-cow; has a round head; a small mouth; very thick lips, covered above and below with pellucid bristles as thick as a straw; small fiery eyes; two small orifices instead of ears, and a short neck: its body is thick in the middle, tapering towards the tail: its skin is thick, wrinkled, with short brownish hair thinly dispersed: it has short legs, five toes on each foot, connected by a web and a small nail on each. The hind feet are very broad: each leg is loosely articulated: the hind-legs are generally extended on a line with the body. The tail is very short.

The animal is about eighteen feet long, and ten or twelve round the thickest part. Their teeth have been sometimes found of the weight of twenty pounds each.

They inhabit the coast of Spitzbergen, Nova Zembla, Hudson's Bay, the Gulph of St. Laurence, and the Icy Sea; but are not seen in the islands between Kamtschatka and America. They are gregarious, and are seen in some places in herds of a hundred together. They are very shy, and avoid places much haunted by man. They are, however, very fierce, and, if wounded in the water, they attempt to sink the boat, either by rising under it, or by striking their great teeth into its sides. They roar very loud; and will follow the boat till it gets out of sight. Numbers of them are often seen sleeping on islands of ice: if awakened, they fling themselves with great impetuosity into the sea. They do not go upon the land till the coast is clear of ice. At particular times they land in amazing numbers. The moment the first gets on shore, so as to lie dry, it will not stir till another comes and forces it forward, by beating it with its great teeth; this is served in the same manner by the next; and so on in succession till the whole have landed.

In the Gulph of St. Laurence those who hunt them watch their landing, and, as soon as they find a sufficient number, they go on shore, each armed with a spear, sharp on one side like a knife, with which they cut their throats. One

walrus

walrus produces about half a ton of oil. Buffon says he has seen braces for coaches made of their skin, which were both strong and elastic.

They bring one, or at most two, young at a time; they feed on sea herbs and fish, also on shell fish, which they dig out of the sands with their teeth.

Besides man they seem to have no other enemy than the white bear, with whom they have terrible combats, but generally come off victorious by means of their great teeth.

II.—THE INDIAN WALRUS

Has two canine teeth, or tusks, placed in the upper jaw, pretty close to each other, and four grinders on each side, at a little distance from these tusks; in the lower jaw three grinders on each side. It is found at the Cape of Good Hope, and among the Philippine Isles; but little satisfactory is yet known respecting the natural history of this animal.

A genus of animals, nearly allied to the last, is

THE MANATI.

This genus has fin-like fore-legs; the hind parts ending in a tail horizontally flat. It contains only three species.

I.—THE WHALE-TAILED MANATI.

This animal in nature so nearly approaches the cetaceous tribe, that had we not resolved to adhere to the systematic writers, we might have left it and some others to come along with the fishes. It scarcely deserves the name of a biped, much less that of a quadruped. What are called its fore-feet are little more than pectoral fins; they serve only for swimming, and are never used for walking, for it never goes ashore like the walrus and seal. It brings forth in the water, and, like the whale, suckles its young in that element. Like the whale it has no voice, and, like that animal, has a horizontal broad tail, without even the rudiments of hind-feet. It inhabits the seas about Berring's Straits; it is also found near the Isle of France.

They live perpetually in the water, and frequent the edges of the shores. In calm weather they swim in great droves near the mouths of rivers. In the time of flood they come so near the land, that a person may stroke them with his hand. They live in families, one near another; each consists of a male, a female, a half grown young one, and a very small one. The females oblige their young to swim before them, while the other old ones surround and guard them on all sides. The affection between the male and the female is very great; for if she is attacked he will defend her to the utmost; and, if she is killed, will follow her corpse to the very shore, and swim some days near the place it has been landed at. The female brings but one young one at a time, and suckles it by two teats. They are vastly voracious; when filled they fall asleep on their backs. During their meals they are so intent on their food, *fuci* that grow in the sea, that any one may go among them, and choose which he likes best.

Their backs and sides are generally above water; and numbers of gulls are continually perching on them, and picking out a peculiar species of louse with which their skins are infested. In winter they are so very lean that you may count their ribs. When struck with a harpoon it requires the united strength of thirty men to draw one of them on shore. When a manati is struck its companions swim to its assistance; some attempt to overturn the boat, others press down the rope to break it, and others strike at the harpoon with their tails, and often succeed in forcing it out.

They are of an enormous size; some are eighty feet long, and weigh eighty thousand pound. The head is small, oblong, and almost square; the nostrils are filled with short bristles; the gape or rictus is small; the lips are double; near the junction of the two jaws the mouth is full of white tubular bristles; the lips are also full of bristles, which serve instead of teeth. In the mouth there are no teeth, only two flat white bones, one in each jaw, with undulated surfaces, which serve in place of grinders. The eyes are extremely small, not larger than those of a sheep; the iris is black; it has no ears, only two very small orifices; its

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tongue is pointed and small; its neck is very thick; the head hangs down. The circumference of the body near the shoulders is twelve feet; about the belly twenty; near the tail only four feet eight; the head thirty-one inches; the neck seven feet. Near the shoulders are two feet, or fins rather, which are only two feet two inches long, and have neither fingers nor nails; concave beneath, and covered with hard bristles. The tail is thick, strong, and horizontal, ending in a stiff black fin, like the substance of whale-bone.

The skin is very thick, black, and full of inequalities, like the bark of oak. It has no hair on it, but is so hard as scarcely to be cut with an axe. Beneath the skin there is a thick blubber which tastes like oil of almonds. The flesh is not coarser than beef, and will not soon putrify. The young ones taste like veal. The skin is used for shoes, and for covering the sides of boats.

The Russians call this animal the sea-cow.

II.—THE ROUND-TAILED MANATI,

Has thick lips; eyes as minute as a pea; and two very small orifices for ears. Its neck is short, and thicker than its head; it is thickest at the shoulders, and tapers gradually to the tail, which is quite round, lies horizontally, is thickest in the middle, growing thinner to the edges. The feet are placed at the shoulders; beneath the skin there are bones for five complete toes; near the base of each foot, in the female, is a small teat. The skin is very thick and hard, having some few hairs scattered over it. Dampier measured some of these animals in the West Indies ten or twelve feet long; their tails twenty inches long, fourteen broad. Some of the largest weighed twelve hundred pounds. Clusius examined one sixteen feet and a half long, and Gomora speaks of them of the length of twenty feet.

The manati, which entirely inhabit fresh waters, according to Dampier, are much less than the others. Those of the higher parts of the Oronoque weigh only from five hundred to seven hundred and fifty pounds. They inhabit the rivers of Africa from Senegal to the Cape, and those of

South America also. They sometimes live in the sea, near the mouth of some great river; into which they come once or twice in twenty-four hours, for the sake of browsing on the marine plants which grow within their reach. They delight in brackish, or sweet water, rather than in salt and in shallow water near low land, and in places secure from surges and rapid tides. It is said that at times they frolic and leap to great heights out of the water. They are taken with a harpoon stuck in the end of a staff, which the Indians use with great dexterity. The Spaniards call them fish-cows.

The extraordinary history of a tame manati, preserved by a prince of Hispaniola, in a lake adjoining to his residence, at the time of the arrival of the Spaniards, deserves to be mentioned. It was, on account of its general nature, called, in the language of the country, matum. It would appear as soon as it was called by any of its familiars; for it hated the Spaniards on account of an injury it had received from one of those adventurers. The fable of Arion was here realised. It would offer itself to the Indian favourites, and carry over the lake ten at a time, singing and playing upon its back. Matum at last, however, escaped to his native waters by means of a violent flood.

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XVII.

THE LIFE OF ARCHIMEDES.

THIS celebrated mathematician was born at Syracuse, in Sicily, about two hundred and eighty years before Christ. He lived about fifty years after Euclid; but under what masters he studied, or how much he was indebted to his predecessors, is unknown. Abel-faragius, the Arabian historian, informs us that he obtained his knowledge from the Egyptians; but it appears that, though he might be indebted for some part of his learning to that country, he repaid the obligation amply by his inventions.

Diodorus Siculus asserts that he travelled into Egypt, but adds, that this country was indebted to him for inventing the cochleon, or screw-pump, for drawing off water. This great man, doubtless, owed the high distinction which he obtained among his countrymen, and the immortal name which he has transmitted to posterity, principally to his own active and inventive faculties.

Diodorus celebrates him as having been the author of numerous discoveries; and Livy speaks of him as being an eminent astronomer and mechanic: "Unicus spectator cœli siderumque, mirabilior tamen inventor ac machinator bellicorum tormentorum," &c. lib. xxiv. c. 33. Cicero, writing to Atticus, informs him, that he is now delivered from a difficulty, which, the more strongly to express its magnitude, he calls the Archimedian problem. Silius Italicus writes thus of him:

"Vir fuit, Isthmiacis decus immortale colonis,
Ingenio facili ante omnes telluris alumnos
Nudus opum, sed cui cœlum terræque paterent."

Though perhaps it is not easy, from the accounts which remain of his inventions, to ascertain their exact properties and uses, yet sufficient is known to justify the panegyrics which the antients have bestowed upon him. It appears from Claudian that he constructed a kind of planetarium in

glass, which represented the motions of the celestial bodies. The description given of this curious instrument by that poet deserves insertion in this place :

When in a glass's narrow sphere confin'd,
Jove saw the fabric of th' Almighty mind,
He smil'd, and said, " Can mortal's art alone
Our heav'nly labours mimic with their own ?
The Syracusan's brittle work contains
Th' eternal law that thro' all nature reigns.
Fram'd by his art, see stars unnumber'd burn,
And in their courses rolling orbs return ;
His sun through various signs describe the year,
And every month his mimic moons appear.
Our rival's laws his little planets bind,
And rule their motions by a human mind.
Salmoneus could our thunder imitate :
But Archimedes can a world create."

A very remarkable instance of his great knowledge of the doctrine of specific gravities is related by Vitruvius. Hiero, king of Sicily, suspecting that in making a golden crown which he had ordered, the workmen had stolen part of the gold, and substituted in its room an equal quantity of silver, applied to Archimedes to exert his abilities to detect the fraud. Revolving the subject one day in his mind as he was in the bath, it occurred to him that he displaced a quantity of water equal to the weight of his body. Quitting the bath with eagerness, he ran naked into the street, crying out, *I have found it ! I have found it !* meaning that he had discovered the method of solving the question. He then procured a mass of gold and another of silver, equal in weight to the crown, and observed the quantity of fluid which each displaced, successively on being put into the same vessel full of water : next he observed how much water was displaced by the crown ; and on comparing this quantity with each of the former, he soon found out the proportions of silver and gold in the crown.

His skill was not less great in mechanics and optics. " Give me a place," says he, " to stand upon, and I will move the earth," for he well knew the doctrine of the lever.

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and consequently that the greatest weight may be moved by the smallest power. To convince Hiero of the wonderful effect of the mechanic powers, he is said, by the help of ropes and pulleys, to have drawn towards him a galley which lay on shore, full manned and loaded. But the greatest proofs were exhibited when Syracuse was besieged by the Romans, under Marcellus. When the vessels of the assailants approached near the city, he contrived, by means of long beams hung in the form of levers, to strike them with such force as to send them to the bottom; or, by means of grappling irons at the end of those levers, to catch them up in the air, and dash them in pieces against the rocks. When the enemy kept at a distance, Archimedes made use of machines by which he threw from behind the walls stones in prodigious numbers, which shattered the vessels to pieces. This made Marcellus give him the name of the mathematical Briareus. One instrument, which he made use of on this occasion, was generally regarded as fabulous by modern writers, till the experiments of the celebrated Buffon gave credit to the story. Archimedes is said to have set fire to the Roman ships, by means of burning-glasses, at a great distance, and the French naturalist just mentioned contrived one capable of setting fire to wood at the distance of two hundred feet.

But Archimedes was not only great in practical mathematics and in mechanical contrivance, for he shone equally in the higher branches of the science, and had a wonderful skill in the investigation of abstract truths, and in demonstrating the most difficult problems in pure geometry.

If Plutarch may be credited, Archimedes regarded mechanic inventions as much less valuable than those intellectual speculations which terminate in single truth, and carry with them irresistible conviction. It is related of him, that he was often so absorbed in mathematical speculations, as to neglect his ordinary meals and the care of his person. When at the bath he would frequently busy himself in drawing geometrical diagrams in the ashes, or when, according to the custom of the age, he was anointed, he would do the same upon his own body. He was so enraptured with the discovery of the

the ratio between the sphere and the containing cylinder, that, passing over all his mechanic inventions, as a memorial of this discovery, he desired his friends to place upon his tomb a cylinder containing a sphere, with a suitable inscription, expressing the proportion which the containing solid bears to that contained.

It is painful to be informed that when Syracuse, with all the assistance of philosophy, could hold out no longer against her vigorous foes, Archimedes was slain by a brutal foldier, as he was busy in solving a problem, and unmindful of the noise occasioned by the storming of the city. It must be admitted, however, that Marcellus had given positive orders to his troops to preserve the life of this great man, and that when his body was discovered he honoured it with a pompous funeral, and treated his relations with great liberality. This unfortunate event happened before Christ 212.

The monument of Archimedes was strangely suffered to go to decay by his countrymen, so that when Cicero came to the quæstorship of Sicily, none of them could inform him where it stood. But that illustrious man was resolved not to abandon the search, and had the satisfaction of succeeding in it. "During my quæstorship," says he, "I diligently sought to discover the sepulchre of Archimedes, which the Syracusans had totally neglected, and suffered to be grown over with thorns and briars. Recollecting some verses, said to be inscribed on his tomb, which mentioned, that on the top was placed a sphere with a cylinder, I looked round me upon every object at the Agragentine gate, the common receptacle of the dead. This, said I to the Syracusan nobles who were with me, this must, I think, be what I am seeking. Several persons were immediately employed to clear away the weeds, and to lay open the spot. As soon as a passage was cleared, we drew near, and found, on the opposite base, the inscription, with nearly half the latter part of the verses worn away. Thus would this most famous, and formerly most learned city of Greece, have remained a stranger to the tomb of one of its most ingenious citizens, had it not been discovered by a man of Arpinum."

Several

Several valuable books by this great man have reached our times, and the whole have been often printed; the last and best edition of his works being that of Oxford, folio, 1792.

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF CHINA.

(Continued from page 208.)

Of Chinese Entertainments.

WE now come to speak of the entertainments of the Chinese, which, when given by persons of distinction, are generally sumptuous, accompanied with the most ceremonious etiquette. An invitation to an entertainment is not supposed to be given with sincerity until it has been renewed three or four times in writing. A card is sent on the evening before the entertainment, another in the morning of the appointed day, and a third when every thing is prepared. The master of the house always introduces his guests into the hall, salutes them, and orders wine to be brought. He then raises his eyes and the cup towards the heavens, after which he pours out the wine on the ground. This ceremony resembles the libations of the ancients. Each of the guests has a table for himself, and that of the master of the house is below all the rest.

A superior domestic conducts the principal guest to an armed chair, which is covered with rich silk. This place is always given to the person of the greatest age or dignity, and to a stranger before all others, although he may be younger or of inferior rank. The tables are ranged in two lines, and, as soon as the company have taken their seats, four or five comedians, richly dressed, enter the hall, and bow themselves four times so low, that their foreheads touch the ground. The representation commences with the sounds of drums, flutes, fifes, trumpets, and other instruments. The floor of the hall, covered with a carpet, serves these comedians for a stage, on which they act their various parts.

The

The Chinese begin their repasts by drinking wine, which is offered to each guest by the intendant upon his knee. They all drink together, and very slowly; and while they are drinking the dishes on the table are removed and others brought in. Every guest has twenty-four dishes served to him in succession; they never use knives; and two sharp-pointed sticks supply the place of forks. They never begin to eat until they are invited by the intendant, which ceremony is renewed every time they drink, or begin upon a new dish. The repast continues till tea is introduced, after which they retire into another hall, or the garden, where they amuse themselves, or enjoy repose, between dinner and the desert. The desert consists also of twenty-four dishes, covered with sweet-meats, fruits, hams, salted ducks, and shell-fish.

These entertainments begin towards the close of the day, and never end till midnight. It is customary to give money to the domestics, and the quality of the entertainer determines the sum. This custom is only practised when the repast has been accompanied with a comedy. Each of the guests returns to his own home in a chair, preceded by several domestics, who carry large lanterns of oiled paper, on which the name and quality of the master are inscribed in large characters. Whoever ventures abroad at such an hour without similar attendance would be stopped by the guard. The day following they return a card of thanks to the officer of the watch.

No dishes, at these entertainments, are more esteemed than stags' sinews, and the nests of a particular species of bird. The former are highly seasoned and dried in the sun. The latter are procured from Tonquin, Cochin-China, and Java, and are made by certain birds, the plumage of which resembles that of the swallow, and they construct their nests almost in the same manner, except that, instead of clay, they employ small fishes, which they cement together with a kind of scum taken from the surface of the sea. These nests are a profitable and valuable branch of commerce to the inhabitants of the places where they are found. Their soups differ from ours both in taste and quality; they are made from rice, mutton, lamb, &c.

The

The perfection of complaisance is no where to be seen but in China: even the lowest ranks of society are actuated by it. The many forms which must be observed in the common intercourse of life, and which must be all broken through before persons can quarrel with one another, contribute to preserve the profound tranquillity which reigns through the whole empire.

Of the Chinese Military.

The only soldiers which were seen by the late embassy at China possessed a very martial appearance, and Mr. Anderson says he never saw a finer display of military parade. They were drawn up in a very regular manner, each regiment being distinguished by a different dress, and divided into companies: these were ranked in close columns, and in their front stood the officers with two stand of colours. They were all arrayed in a kind of armour, which consisted of a loose coat or robe, in imitation of a coat of mail, with steel helmets that covered their heads and shoulders. Their implements of war were various, comprising sabres, daggers, spears, lances, bows and arrows, with various other weapons. Those companies of soldiers who wore no warlike instrument but the sword, had a shield to accompany it. Every one of the military divisions was distinguished by their dress and arms, and arranged with the utmost propriety, not merely as to the regularity of position in their general distribution, but as to the effect of contrast in the variety of external appearance. On both sides of the road there were seventeen of these divisions, each consisting of about eighty men; and a band of musicians, placed in a building erected for the occasion, continued to play as the cavalcade of the English embassy passed between the lines.

Chinese inland Navigation.

It is difficult to describe the magnificent appearance which some of the more spacious Chinese rivers sometimes make. Many thousands of trading junks, besides multitudes of vessels for pleasure, and great numbers of boats, containing all kinds of provisions, fruits, and merchandize for sale, are frequently to be seen at once. And what must appear singular to

to an English eye, most of the boats are rowed and steered by women. It is not uncommon to see a woman with a child tied to her back and another suckling at her breast, employed in handling the oar or guiding the helm.

China is celebrated for its canals, and the following is the method adopted by the Chinese to accelerate the passage of vessels at those places where the difference of levels prevents any farther progress on the surface of the water. Two strong posts are fixed in the middle of the river, from which two large beams are made to project in a state of suspension over the water, to these, strong blocks of pulleys are attached, with ropes of sufficient strength, so that when a junk arrives at the place, it is well secured, and persons accustomed to the business hoist it, passengers and lading, from one river to the other. This operation occupies but a few minutes, and is not attended with greater danger than the common contingencies of voyages.

Of Chinese Industry.

Many parts of this empire are exceedingly barren, but the great population of the country induces the inhabitants to cultivate every spot capable of being tilled. One example will illustrate the barrenness of the country, and the spirit of its inhabitants.

On a high mountain, says Mr. Anderson, I discovered several distinct patches of cultivated ground, in such a state of declivity, as to me would have appeared altogether inaccessible, if I had not seen the owner employed on one of these alarming precipices. This peasant had a rope fixed about his middle, which was secured, at the other end, on the top of the mountain, and by this means the hardy cultivator was able to let himself down to any part of the precipice, where a few square yards of ground gave him encouragement to plant his vegetables or his corn; and in this manner he had decorated the mountain with a variety of cultivated spots. Near the bottom he had erected a wooden hut, surrounded with a small piece of ground, planted with cabbages, where he supported by this hazardous industry a wife and several children.

The manner of catching water-fowl in China is curious.

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When the fowler spies his game he wades into the water with only his head above the surface, which is covered with a pot full of holes, to let in air and light. This pot is stuck with feathers, to deceive the game: so that when he approaches them they are not alarmed, but suffer him to draw them by the legs under the water, and the rest of the fowls are not disturbed by it, but remain about the place till, perhaps, the greater part of them is taken.

Of the Chinese Post and Mode of paying Taxes.

The letters conveyed by the Chinese post are inclosed in a large bamboo basket, hooped with cane and locked; the key is given into the custody of a soldier, who delivers it to the post-master of the town to which they are going. The basket is then strapped on the courier's shoulders, and being decorated with a number of bells, which, by the motion of the horse, make a loud jingling, announce, at every place, the approach of the post. Five light-horsemen escort the courier; and as the fleetest horses are selected, and changed at every stage, the mails in China are conducted with extraordinary expedition and safety.

The government of China receives the greater part of the taxes in the produce of the country, which is a considerable spur to improvement and industry in every class of the people, who are to get their living by the exertions of genius or the sweat of their brow. The landlord also receives his rents in the produce of his farms; and the farmer pays his servants, in a great measure, by giving them pieces of waste land, and occasional encouragement to excite their industry. These customs tend to insure the prosperity, and promote the general cultivation of every part of that extensive empire.

(To be continued.)

THE ANTIENT AND MODERN HISTORY OF NATIONS.

OF THE GRECIAN MONARCHY.

ANTIEN Greece, which is now the south part of Turkey in Europe, was bounded on the east by the Ægean sea, now called the Archipelago; on the south by the

Cretan or Candian sea ; on the west by the Ionian sea ; and on the north by Illyria and Thrace. This country, though limited within such narrow bounds, gave birth to all the arts of war and peace, produced the greatest generals, philosophers, poets, painters, architects, and statuaries that the world ever knew : she overcame the most powerful monarchs, and dispersed the largest armies that were ever brought into the field, and at length became the instructor of all mankind.

In the early periods of the world kingdoms and states were inconsiderable : a single city, with a few leagues of land attached to it, was denominated a kingdom. Antient Greece was divided into several such states, of which

SICYON is reckoned the oldest, the commencement of which is, by historians, dated 2089 years before the christian æra. The founder and first monarch of Sicyon was Ægialeus, who was succeeded by twenty-five kings, whose several reigns together make an epoch of nine hundred and sixty years, and at last became subject to the kingdom of

ARGOS, which was founded in 1856 B. C. Among the Argive kings was Danaus, from whom the Greeks were called Danai.

ATHENS was formed into a kingdom about three hundred years after the establishment of Argos. Cecrops, the first king, was by birth an Egyptian ; he instituted many wise laws relating to the conduct of life, and the exercise of religious and civil offices. He divided the whole country into twelve districts, and established a court for trying causes, entitled the Areopagus. Codrus, the last of the Athenian kings, is celebrated for having devoted himself to death for his country. Medon, his son, was set at the head of the commonwealth, under the title of Archon, an office which, at first, was held for life, afterwards the archon's power was limited to ten years, and at last the office was elective every year.

THEBES, the next of the Grecian kingdoms, was founded by Cadmus, to whom is ascribed the honour of inventing sixteen letters of the Greek alphabet. The history and adventures of his posterity, Laius, Iocasta, Œdipus, &c. make a principal figure in the tragedies of Eschylus, Sophocles, and Euripides.

SPARTA,

SPARTA, or Lacedæmon, was instituted by Lelex. Helen, the tenth in succession from this monarch, is celebrated for her beauty. She had not lived with Menelaus her husband more than three years before she was carried away by Paris, the son of Priam, king of Troy, which was, perhaps, the first occasion in which the Greeks united in one common cause. The inhabitants of Lacedæmon rendered themselves illustrious for their courage, intrepidity, and self-denial. From their valour in war, and their moderation and temperance at home, they were courted and revered by all the neighbouring princes. In the affairs of Greece the interest of the Lacedæmonians obtained a decided superiority for five hundred years. They were forbidden by the laws to visit foreign states, lest their habits should be softened, and their morals should be corrupted. They were remarkable for the great respect and reverence which they paid to old age.

The women were as courageous as the men, and many a mother has celebrated with festivals the death of a son who had fallen in battle, or has coolly put him to death, if by shameful flight he brought disgrace upon his country. Among many festivals celebrated at Lacedæmon, it was customary for the women to drag all the old bachelors round the altars, and beat them with their fists, that the shame and ignominy to which they were exposed might induce them to marry.

CORINTH was formed into a state, and governed by regular kings at a later period than the cities above mentioned. It was founded by Sisyphus, and received its name from Corinthus, the son of Pelops. The inhabitants were once very powerful, and had considerable influence among the Grecian states. They colonized Syracuse, in Sicily, and delivered it from the tyranny of its oppressors by means of Timoleon. Corinth was burnt to the ground during the consulship of L. Mummius, 146 B. C. The riches which the Romans found there were immense.

MACEDONIA was founded by Caranus 814 B. C. and continued as a kingdom till the battle of Pydna. The Macedonian soldiers were always held in the highest repute; they

resisted the repeated attacks of the bravest and most courageous enemies.

Such is the picture that Greece offers in its earliest infancy. A combination of little states, each governed by its respective sovereign, yet all uniting for their mutual safety and general advantage. Still, however, their intestine quarrels were carried on with great animosity; the jealousy of their princes was a continual cause of discord. The people, at length, worn out with the contentions of their sovereigns, desired to free themselves from those wars in which they were involved by the ambition or folly of their leaders. A spirit of freedom prevailed universally over Greece, and a change of government was effected in every part of the country, except in Macedonia. Thus monarchy gave way to a republican government, which was diversified into as many various forms as there were different cities, according to the different genius and peculiar character of each people.

These cities, though seemingly different from each other in their laws and separate interests, were united with each other by a common language, one religion, and a degree of national pride, which taught them to consider all other nations as barbarous and feeble. To strengthen this union games were instituted in different parts of the country, with rewards for excellence in every pursuit. These sports were intended for very serious and useful purposes: they afforded an opportunity for the several states to meet together; for exercising the youth in the business of war; and increasing that vigour and activity, which were of the utmost importance in deciding the fate of a battle.

We shall now recite the most memorable facts recorded of those states of Greece which flourished in what is usually termed the *third monarchy*, beginning with Athens as the most eminent. It has already been observed that, upon the death of Codrus, a magistrate was chosen to succeed, under the title of archon; this office was continued for nearly three hundred years, when there seemed to be a general desire among the people to be governed by written laws, instead of being subject to the caprice of individuals. For this purpose they pitched upon Draco, as a legislator, a man of tried wisdom

dom and integrity, but whose severity against human frailties was so great, that his laws were said not to be written with ink but with blood. By his code all crimes were punished with death; and being once questioned as to the justice and propriety of these laws, he replied, "Small crimes deserve death, and I have no higher punishment for the greatest."

The excessive severity of Draco's laws prevented them from being justly administered: sentiments of humanity in the judges, compassion for the accused, and the unwillingness of witnesses to exact so cruel an atonement, conspired to render the laws obsolete before they could be well put into execution. In this manner they counteracted their own purposes, and their excessive rigour paved the way for the most dangerous impunity.

In this distressful state of the commonwealth Solon was applied to for his advice and assistance. His great learning had gained him the reputation of being the first of the seven wise men of Greece; and his known humanity procured him the love and veneration of all his fellow citizens. At the time when Greece had carried the arts of eloquence, poetry, and government, higher than they had been seen among mankind, Solon was considered as one of the foremost in each department. A question was once proposed to the wise men of Greece, *which was the most perfect popular government?* One replied, that where the laws have no superior. Another, that where the inhabitants are neither too rich nor too poor. A third, that where virtue is honoured and vice detested. The fourth, that where dignities are conferred only upon the virtuous. The next, that where the citizens fear blame more than punishment. The sixth, that where the laws are more regarded than orators. But Solon's opinion seems to have been most respected, viz. that the most perfect popular government was that where an injury done to the meanest subject is an insult upon the whole constitution.

Such was the man to whom the Athenians delegated the power of making a new code of laws. Athens at that time was divided into different parties; but it is said that the rich loved Solon because he was rich, and the poor because he was honest. He was chosen archon with the unanimous consent of all, and then set about giving his countrymen the best

constitution they were capable of receiving. He abolished the debts of the poor; repealed all the laws enacted by Draco, except those for murder; regulated all offices, employments, and magistracies, which he left in the hands of the rich; he distributed the citizens into four classes, according to their incomes; he restored, reformed, and gave dignity to the court of Areopagus, so called from the place where it was held; and instituted a court superior to this, consisting of four hundred persons, who were to judge upon appeals from the Areopagus.

The particular laws instituted by Solon for dispensing justice were numerous and excellent, of which we shall mention a few. He obliged all persons, during public dissensions, to espouse one side or the other, under the penalty of being declared infamous, condemned to perpetual punishment, and to have their estates confiscated. By this law a spirit of patriotism was encouraged and excited. He permitted every person to espouse the cause of him that was insulted and injured; thus all virtuous characters became enemies to the man who did wrong, and the turbulent were overpowered by the number of their opponents.

He abolished the custom of giving portions in marriage with young women, by which he prevented all dishonourable traffic in matrimony, which ought to be encouraged as a connection calculated for the mutual happiness of both parties, and the advantage of the state. He regulated the rewards to the victors at the Olympic and Isthmian games; encouraged industry by discountenancing and punishing idleness. No one was allowed to revile another in public; the magistrates, who were considered as examples, as well as guardians to the public, were obliged to be very circumspect in their behaviour, and it was even death for an archon to be taken drunk.

After Solon had framed these institutions, with many others equally excellent, he caused transcripts of them to be hung up in the city for all the inhabitants to peruse; and appointed a set of magistrates to revise them carefully, and rehearse them to the people once a year, and then he withdrew from the state.

Not many years after Solon had left Athens, the city became

came divided into factions, at the head of which were Pisistratus, Megacles, and a person named Lycurgus; of whom the first, by an insinuating behaviour, and by his kindness to the poor, gained the ascendancy, and at length seized the government into his own hands. Solon, who had returned to Athens, finding it impossible to stop the public torrent, retired to Cyprus, where he died in the eightieth year of his age.

Pisistratus, though twice deposed, found means to reinstate himself, and at his death to transmit the sovereign power to his sons Hippias and Hipparchus. Hipparchus, for an act of private treachery and infamy, was slain in a popular tumult; and Hippias, at length, was obliged to resign all pretensions to sovereign power, and to leave the state in the space of five days.

We cannot, in this sketch, trace the different important changes which happened to the Athenian state during the period of its glory. Its manners and customs were frequently changing; the genius and learning of its inhabitants were never excelled, perhaps, scarcely ever equalled by the people of any country in the world. Athens was, in fact, the school and abode of polite learning, arts, and sciences. The study of poetry, eloquence, philosophy, and mathematics began, and arrived almost at perfection in that celebrated city. At length growing vain with too great prosperity at home, or by their success against their enemies, or by that respect and admiration paid them by foreign states, they treated their subjects and allies with insolence, which brought upon themselves the envy and hatred of all Greece. This gave rise to the Peloponnesian war, when the Peloponnesians and others, to tame the insolence of the Athenians, took up arms, under the direction and auspices of the Spartans. The war was carried on with equal fortune for a long time, till at last the Athenians being broken by a great slaughter at the river Ægos, were forced to yield to the Spartan yoke.

We shall close this account with some particulars relating to the Areopagus, which was the senate-house of Athens, and was, as the name denotes, situated on a hill, dedicated to Mars. This court was composed of those persons who had filled the office of archon with dignity and public approbation.

tion. It always consisted of men distinguished by the excellence of their character, and the purity of their manners: They determined all causes relating to the civil and religious government of the state; the custody of the laws, the direction of the public revenues, and the inspection of the morals of the youth were committed to their care; and so high was the estimation in which this court was held, that Demosthenes asserts, that, in his time, they had never passed a judgment that did not satisfy both the plaintiff and defendant. The same and authority of the Areopagus were so universal, that even foreign states often referred to them the decision of their differences. They usually met three times every month, always in the night, that they might not be interrupted by the business of the day, nor be influenced by objects that excite the passions either of pity or resentment.

(To be concluded in the next number.)

PRACTICAL INSTRUCTIONS

On Taste, Literature, and the Art of Composition.

CONTINUED IN A SERIES OF LETTERS FROM A FATHER TO
HIS SON.

LETTER XVI.

My dear George,

HAVING finished the short sketch which I meant to submit to you, of the history of eloquence, I now proceed to consider the different kinds of it, and the rules necessary to be observed by those who are to speak in public.

The antients divided eloquence into three kinds, the demonstrative, the deliberative, and the judicial. The scope of the first of these was to praise or blame; the second was to advise or dissuade; and the third intended to accuse or to defend.

To us, however, it will be more useful to follow that division which modern practice points out, and taken from the three great scenes of modern eloquence, popular assemblies, the bar, and the pulpit. And though the eloquence
of

of each of these have a great many properties in common, yet each of them has something peculiar in its spirit, manner, and character. I shall begin with the eloquence proper for popular assemblies, as introductory to the other kinds of public speaking. The British parliament is certainly the noblest theatre for this kind of eloquence of any in Europe. I shall, therefore, with a view to that object, proceed to lay down some rules necessary to be observed by all speakers in popular assemblies.

Rule 1st. You should always endeavour to convince your hearers before you endeavour to persuade them. In vain you attempt to interest them in what you say, unless you first convince them of its truth; you must therefore study strength of reasoning much more than style or ornament. In reading the orations of Demosthenes we see much sentiment amidst his heat and thunder; so Quintilian, "*Cura sit verborum, sollicitudo rerum.*" It is a capital rule in speaking, that we should be as much master of the business we speak upon as possible, and proper words will follow of course.

Rule 2d. Never speak on the wrong side of the question, or use any arguments, unless you are persuaded of their truth; for your oratory must be much colder and more languid, when you are not impressed with the truth and importance of the subject yourself. Neither too great nor too little preparation is adviseable, for you cannot have a knowledge of every thing which may occur in the dispute, as is commonly the case with respect to those subjects which are to be discussed at the bar, and always of those which are treated of in the pulpit. Studied arguments, or what are called set speeches, therefore, as they will not be proper answers to what may be advanced, will always appear stiff and awkward. It may not, however, be amiss to write an introduction to what you are to speak upon, and even to commit it to memory. Too little study may also be dangerous, as by this means you may be unable to say any thing to the purpose. But you ought to study things rather than words, for you can never be too much master of your subject.

Rule 3d. Though this kind of oratory does not admit of such

such formal division as that designed for the pulpit, yet you should always have some regard to arrangement; that is, you should speak to each part of your subject, and not put things together in a confused manner: this method is sufficiently attended to by Cicero, and in this respect he is superior to Demosthenes. You ought then to lay down a plan in your own mind, to which you ought to adhere.

Rule 4th. The manner of expression ought to be warm and animated: I have already observed that the greatest efforts of eloquence are always accompanied with passion. You must, however, observe a proper decorum in all your actions, nor ever suffer yourself to be transported to undue extremes. For, first, your warmth ought always to be suited to the occasion and subject. Some parts too of the subject will require more warmth than others. Secondly, you ought never to assume a counterfeit warmth, or to seem to have it without feeling it, otherwise the disguise will soon be seen through, and you will appear ridiculous. Thirdly, when warmth is felt, you must take care not to let its impetuosity go too far; you should begin in a moderate key, and endeavour as you rise to inflame the passions of your hearers, that so you may be always in unison with them, for if this is not the case all your pains will be lost, and your audience remain unpersuaded and unconvinced.

4thly. Observe a regard to what the public ear will bear, and endeavour to adapt yourself to the fashions of the times in which you speak, at least as far as regards manner, style, and utterance. The noblest piece of eloquence in Demosthenes' orations is that part so much admired by critics, in his oration against Æschines, where he calls upon the ghosts of those who had fallen in the battle of Marathon; but such an apostrophe would be too bold for any modern assembly. In a word, you must attend to all the particulars of time, place, and character. You must, on every occasion, consider the place where you deliver your oration, and the character of your hearers.

Rule 6th. The style for the popular assemblies ought to be full, free, and natural; strong and expressive; neither too diffuse, so as to render it feeble and languid, nor too concise, so as to be in danger of obscurity, for every thing ought to

be stated in the clearest manner. Never place an argument in too many different views, for by turning it over too often the attention of your hearers will cool, but place it in the strongest point of view you are able at first, and there let it rest.

Rule 7th. With regard to the pronunciation or delivery it ought to be firm and bold; too great modesty may give the audience a suspicion concerning the justice of your cause, or at least will prevent them from deeply interesting themselves in it. On the other hand, arrogance and blustering ought to be avoided with equal care.

I shall now consider, in the next place, the eloquence of the bar; and as most of the rules for popular assemblies are equally proper here, I shall not have occasion to descant long upon the subject. The eloquence of the bar is confined to a few topics, whereas in popular assemblies it has a much wider range; at the bar it is circumscribed by lines and squares, it is limited by precedents and acts of parliament. As conviction is the chief object of the oratory of the bar, you must address the understanding rather than the imagination and passions, you must therefore study things more than words, for we are soon wearied with a copious verbose speech where the reasoning is feeble. Antient lawyers, as I before remarked, had a great advantage over the moderns; their judges were much more numerous, and therefore the orator had a much better chance of drawing them over to his side, as it is scarcely probable that among so great a number many would be proof against the charms of eloquence. There were fifty judges in the common trials at Athens. When Socrates was tried there were two hundred and eighty who voted against him, besides those on the other side. When Cicero pleaded for Milo he addressed his discourses to fifty-one judges; besides they had few laws, and the judges had a kind of discretionary power, according to what they thought agreeable to reason and common sense, so that the chief business of the pleader was to shew that what their clients did was just and proper in their circumstances. So Cicero says a man of common abilities might learn the laws in three months, which we all know would be impossible for an English lawyer.

There

There is, indeed, no great room for any of the greatest efforts of eloquence at the bar at present, unless sometimes in addressing a jury. As conviction is the main thing in view, you ought to be well acquainted with all the circumstances of time and place, and perfect master of the case before you.

The style ought not to be affected, but clear, perspicuous, smooth, and fluent, and adapted to the nature of the case. It is very necessary that the speaker should be, or at least seem to be, interested in the cause he pleads. The uncommon success of the great ornament of the bar at present, Mr. Erskine, arises, in fact, in a great measure from the ardent and hearty interest which he appears to take in the cause he is pleading. Indeed as the orator represents his client, so he should appear as much engaged and as warm in the cause as we suppose his client would be was he to plead his own cause. A good opinion of the persons probably is also necessary to persuasion, though to some this may appear of little consequence, yet the case is otherwise if we are suspicious of an advocate's character, we always hear him with disgust, and are afraid he imposes upon us, for this reason lawyers should be very cautious of embarking in a cause that is odious or unjust. This may fix an imputation upon their principles and characters that may never be effaced.

Having now gone over the qualifications which seem most necessary for popular assemblies and the bar, in my next letter I shall proceed to the eloquence of the pulpit.

THE LITTLE HERMITAGE.

(Concluded from vol. III. page 223.)

THE mildness of the season caused the cares which the children continued to bestow on their garden to prosper more and more; and already the greater part of the plants that they had cultivated in it offered to their eyes a rich mixture of all kinds of flowers. Struck, as if for the first time, with the brilliancy and variety of their colours, the elegance of their forms, and the wonderful combination of all their parts, they often stopped to observe them in a

kind

kind of ecstacy. They often questioned Joseph on their names, their origin, their properties, their destination. One day as they were making him admire a fine lily which adorned the entrance of their cabin, Joseph seized the occasion to teach them the principal characteristics by which all plants are distinguished.

"You know already," said he to them, "that every plant is composed of roots, a stalk, branches, flowers, and fruits. But the flower, above all, deserves particular attention, for it is in this part that Nature has placed the germ for the perpetual reproduction of all vegetables, and it is this that offers the most remarkable signs for distinguishing and recognizing them.

"Every flower is composed of several parts, which it is necessary to know first, in order to arrive at more important knowledge. Thus, for example, in the lily, the first thing that strikes your eye is that beautiful white flower, which presents almost the appearance of a vase of alabaster. Well, this part is called the corolla. You next observe that this corolla is itself composed of several pieces or segments, which are joined at the bottom, but separated at the top; these are what are called the petals. Every corolla, which is thus divided into pieces, is called a polypetalous corolla. Those that are only in one piece, like the little flowers of a convolvulus, which you see there, are called monopetalous. But to return to our lily. Just in the middle of this corolla you observe a kind of little column fastened to the bottom, and pointing upwards. This whole column is called the pistil. But it is divided into three parts; first, the base, which you see swelled into the shape of a little gland, which is the germ; secondly, a little thread, in the shape of a needle, which you see on the germ, which is called the style; thirdly, a little hat crowning this style, which is called the stygma. Round this pistil you see, besides, six other little columns, much smaller, terminated also by little tufts; these are called the stamens. But in each of these stamens also two things are to be distinguished, which have different names; the thread, which is the slender part, connected with the corolla, and the anther, which is the little tuft fastened to the extremity of the thread. Each of these

anthers is a kind of little box, which opens when it is ripe, and out of which comes a yellowish dust, which serves to render the germ fruitful. This dust is called farina.

“Such are the different parts which constitute the greater part of flowers, as well those of herbs as those of trees and shrubs; with the addition, however, of the calix, which commonly makes another part, but which is wanting in the lily. What is called the calix in other flowers is that green part which supports and embraces the lower part of the corolla, and which envelopes it completely before its opening, as you see there, in those buds of roses and pinks.”

After having thus analyzed the component parts of the flower, Joseph made them remark their figure, position, and different combinations in the different plants which offered themselves to their eyes; he made them observe their similarities and differences, and he taught them how, from these similarities, a methodical order of classification had been invented, indispensably necessary for recognizing that multitude of plants which covers the surface of the earth. Thus the children already knew that all the plants whose flower resembles the lily, such as tulips, hyacinths, narcissuses, tuberoses, and even the onion, leek, and garlic, form a separate class, called the liliaceous. Thus they knew which should be placed in the cruciform class, or those whose flowers are in the shape of a cross, such as the single stock and wall flower, the cabbage, radish, and turnip; those which are comprehended under the name of papilionaceous, on account of their resemblance to the wings of a butterfly, such as peas, beans, broom, lentils, French beans, &c. Those too that are called umbelliferous, or flowers growing like an umbrella, such as carrots, parsley, chervil, &c.; the rose-like flowers, such as poppies, ranunculuses, the apple and strawberry blossom, roses themselves, &c. the labiated and hooded, or flowers with a throat, like sage, white nettle, balm, &c.

Often a little insect, a worm, an ant, a fly, became the subject of a conversation of another kind, which was not less interesting to the children. They listened with particular avidity to the singular accounts which Joseph gave them of the metamorphoses of butterflies, and the greatest

part

part of winged insects; of the labours, the instinct, and the battles of ants; of the kind of artillery which their enemy, the lion-ant, plays off against them from the bottom of his little funnel-shaped fosse; of the cause of that greenish light which the glow-worm emits in the dark; of the multiplication of polypes in fresh water, and of those large earth-worms which children so often amuse themselves with observing and cutting in pieces; of the structure and purpose of that fine tissue which spiders weave around them; and of the wonderful industry and admirable government of the bees.

One day, when they were occupied in their garden by some of their usual amusements, they suddenly heard a great humming; they raised their eyes, and saw a large swarm of flies, who, after having balanced themselves some time in the air, finished, by attaching themselves in the form of a cluster to the branches of a neighbouring willow. The children immediately called Joseph. He came, and saw that they were a swarm of bees emigrating; he approached them without fear, and, after merely covering his face with a piece of thin cloth, hanging like a veil from his hat, he observed them some time in silence. Then, in the midst of these bees, who were humming and crowding one upon another, he perceived one much larger than the rest, with shorter wings; recognizing her for the directress of the colony, he seized her adroitly in his fingers. Then, having placed her upon his arm, the children immediately saw all the other bees detach themselves from the branch, and settle in a groupe on the same part of his body, without giving him a single sting. Joseph brought them in this manner to another tree, situated in the garden itself, by the side of the stream, in the trunk of which he had observed a hollow fit for their habitation. Joseph took the new queen bee in his fingers, and placed her on the side of the opening of this cavity, and all the other bees followed her in an instant. Thus the little hermitage was furnished with a natural hive of bees, from which the children promised themselves great advantage.*

* This mode of managing bees, which may, perhaps, appear improbable to many persons, has, however, been several times repeated by Mr. Wildman, before the Royal Society.

Another day, when they were sitting in the cabin with Joseph, talking of lions, tigers, and other wild beasts which people the deserts of Africa, Joseph suddenly began to say to them with a terrified air, "Take care, my little friends, I see here, almost close to us, a downy, yellowish monster, which has eight great legs, each of which is armed with two great claws, which contain a kind of wet sponge; this monster has also near his throat something like two hands, which he uses in devouring his prey. Like Argus, his head is all covered with eyes; he has eight ranged in an oval form on his forehead, and two horrible pinchers, set with sharp hooks, appear to proceed from his bloody throat." "But where is this monster?" asked the children, looking anxiously around them. "Just by you. There, Paul; take care, it is going to climb up your leg." "What! is it that spider?" "Yes;" and Joseph instantly seizing it, and analyzing all the parts of its body, shewed them that its structure exactly answered to his description of it.

At the same moment they suddenly heard the steps of a little animal trotting under the shelter of their cabin. Honorius, who was sitting near the door, turned his head round gently, and exclaimed, as he darted out of the cottage: "Come, come, and see, here is a little red animal, with a great tail turned over his back, like a plume. O, he is running away up the trees! Look, look, how he leaps from bough to bough!" Louis, Paul, and Joseph, who came out directly, had scarcely time to catch a glimpse of him. He had already gained a row of poplars which extended to the border of the wood, and almost in the twinkling of an eye he had returned to its shade. "O!" cried the children, addressing themselves to Joseph, and looking at each other with an air of equal astonishment, "what is this little animal? How quickly it bounded from tree to tree. One would have thought it had been a bird; yet, I think, it had no wings." "It has no wings," replied Joseph; "it is a little quadruped, nearly the size of a rat, which, like it, has only four legs to move itself with, but which has, however, almost all the agility of birds, and their habits and manner of living. Like them it is almost always in the air; like them it inhabits the tops of trees, builds

builds its nest upon them, feeds upon their seeds, leaps from one branch to another merely by the elasticity of its legs, and only descends when it is obliged, as now, to come and seek its food on the ground. In short, this little animal is the squirrel, which you have perhaps sometimes heard of."

"Yes, we had heard, indeed, that there were some in the forest down there, but we had never seen any before. Ah, it was a pity we did not catch this; what an elegant air it had!" "Do not distress yourselves," replied Joseph, "this is certainly not the only one that inhabits the wood where it has taken refuge; and this is exactly the season when these animals have young ones. Perhaps if you search well you may discover a nest." "O, then we will look over all the trees with the greatest care. But how are we to know a squirrel's nest?" "It is commonly on the largest trees, in the forking of a great branch, near the trunk, that they fix their habitation. They form it of little twigs, which they interweave with moss and a little moulded earth, so that the whole appears at a distance to be only a tuft of greenish moss, which seems to have grown naturally on the trunk of the tree. The inside is hollow, and large enough to contain the whole family, which usually consists of the father, mother, and three or four little ones. This nest has only one narrow opening in the upper part, and above this opening is a kind of roof, like a pent-house, which shelters the whole, and causes the rain to run down the sides, without penetrating the little mansion."

The three children, impatient to make so interesting a discovery, immediately set out on the search. Several times their ardour was painfully deceived by old birds' nests, or mere tufts of moss, which they mistook for the object of their search. But at length they were well rewarded for their trouble. In the evening they had the satisfaction of bringing home three new guests, a little squirrel, and two young doves.

By care they soon rendered them very familiar; and the company of these pretty little animals added new charms to their habitation. When they came in the morning, on one side the two young doves hastened to them, clapping their wings, and fluttering from one to another; sometimes on

their heads, sometimes on their shoulders, and uttering little cries of joy, as if to express their pleasure in seeing them again. On the other side was the little squirrel, who, still more lively, more active, and more petulant, climbed up, and ran over every part of their bodies, rummaged in all their pockets to find something good to eat, and often snatched from them with the swiftness of lightning, the food that they held in their hands, or even in their mouths. When the children were busy working in their garden, or playing in the meadow, these little animals still followed them, and remained perched upon their shoulders, or upon some neighbouring bush. They were so tame, that, in the absence of their young masters, they did not leave the cabin, though they were at full liberty. If sometimes they wandered to a little distance to procure food, yet they never failed to return at night. The squirrel commonly passed the night in a little cell which he had scooped out for himself in the roof, whilst the two doves remained side by side, on a stick placed across the top of the cabin for a perch.

The children soon wished to increase still more the population of their little colony; and one day they told Joseph how glad they should be to have an aviary full of birds by the side of their cottage. "I could easily," replied Joseph, "show you how to catch a great number, and of almost all the kinds that inhabit this part of the country; but it is on one condition, that you will not keep them in captivity, and will suffer all those that do not choose to stay with you to return to the woods; for it is a cruel thing, my little friends, for these poor animals, as well as for men, to be deprived of their liberty." "Well," replied the children, "we promise you to let them all go; but we shall be very glad to look at them nearer for a moment, to hold them in our hands, and particularly to see how you will manage to catch so many as you say." "I shall do it by a very simple method; I want nothing but birdlime." "Ah, you will catch them with a call then!" "Exactly so." "O, we have often heard of that way of catching birds, but we have never had the pleasure of seeing it. Well, Joseph, it is a holiday to-morrow; and if you will go to the town, we will give you all our money to buy as much birdlime as will
be

be necessary. Joseph consented to their wish with his usual civility. The next day he went to the town, but, on his return, he informed them that he had heard some news, which would oblige him immediately to take a journey into his own country, and that night he begged leave of absence for several days of their father. This was, as may easily be imagined, a great cause of grief to the children, who made him firmly promise to return, and to perform his journey with all possible diligence.

The time of absence allowed him was much more than expired, and Joseph did not return. One day the farmer received a letter from the neighbouring town, which informed him, that a box, directed to him, had arrived by the Paris carrier, which he was desirous to send for. Accordingly, the next day, a man on horseback was dispatched to bring it; and the box being brought in the evening, as all the family were assembled ready to sit down to supper, the farmer prepared to open it. All the children were mounted on chairs round the table, with their eyes fixed on the box, in the most lively impatience to see what it might contain. The lid having been taken off, with several sheets of paper which covered the contents, there were first seen four pretty pocket-books of nice red morocco, with letters of gold upon them; and on one was read Louis, on another Paul, on the third Honorius, on the fourth Catherine.

Judge of the surprize, the agitation, the joy, of the four children, on hearing their father pronounce these words. "That is for me! that is for me!" cried they, one after another, leaping and gesticulating with all their limbs. "Let us see, papa."—"Where is mine?"—"There is your's."—"No, it is mine."—"No, it is mine." They could not hear one another speak in the house.

Below these pocket-books were four pretty ebony writing desks, surrounded with circles of silver; four cases of mathematical instruments, crayons of all colours, rulers, compasses, four pretty knives with ivory handles, four little pruning-hooks, pens, penknives, little fine scissars, four botanical magnifying glasses, and four pocket compasses. Beneath were some pretty little books, bound in red and green morocco, on the backs of which were read these titles, the Children's

Children's Friend, Telemachus, Robinson Crusoe, Paul and Virginia, La Fontaine's Fables, &c. Under these were several books of engravings, drawings, writing copies by the best masters, and papers of different kinds.

At length, at the bottom of all these, was found a sealed letter directed to the farmer, in which he immediately read these words :

" Worthy Citizen,

" You deigned to receive me into your house when I was unfortunate, and wandering without an asylum. I shall never forget this service, and particularly the touching interest in my welfare which your amiable children constantly showed in the days of my adversity, when they so often diverted me from the bitter reflections which harrowed my soul. Accept for them, I beg, these slight testimonies of my gratitude and tender attachment. I shall soon have the pleasure of seeing again and embracing them, and of teaching you to recognize in your former servant a constant friend.

" JOSEPH B —."

(End of the Little Hermitage.)

INFORMATION CONCERNING BERQUIN AND HIS WORKS.

THE life of an unambitious man cannot interest by a variety of events. Berquin, like all literary men, was fond of solitude, and his manner of life was very uniform. He was born at Bourdeaux, where, in common with almost all other celebrated men, he early began to cultivate a taste for poetry. His parents, who wished to have diverted him from the commerce of the Muses to embrace one of a less refined but more substantial kind, employed all their efforts to give another direction to his rising inclinations. Berquin, who was a good son, several times promised to rhyme no more. He would have conquered himself, but he never was able ; Providence had marked out his destiny. He came to Paris, and found it impossible to resist the desire of cultivating an art for which he had so decided a taste.

Berquin, with gentle manners and a feeling heart, soon entered

entered upon that path of literature with the charms of which he was most captivated, that of rural poetry. The idyl is the most esteemed by those who love the country; and it was by this title that it obtained the favour of Berquin, particularly in the spring of his life, at that happy age when the yet unwearied imagination so easily resigns itself to the pleasures of pastoral scenes.

Idyls must be the production of youth, or, if I may venture to say so, of adolescence. Every one knows that Gessner had composed all his master-pieces at five and twenty. Berquin, to whom the French are indebted for having transferred to their language a part of the beauties found in the pastorals of Gessner, profitted, like him, by the first emotions of his heart to write those charming idyls which formed the basis of his reputation.

It was not till some years after the publication of these idyls that he turned his attention to that species of composition so dear to tender hearts, which has given rise to so many sweet tears of memory and regret. His ballads have obtained the most merited success. That in which the poet so charmingly expresses the grief of an unfortunate man betrayed by love, and finding in the presence of his child the only consolation of his pain, will always be heard with new pleasure. The most touching interest reigns also in that composed by the side of the cradle of an infant.

Berquin tried himself also in the theatrical career; he had dramatized and put into very pretty verse Marmontel's tale of the "Connoisseur;" and some other dramatic pieces remained in his port-folio.

But he soon renounced these occupations to become "The Children's Friend." No one, perhaps, was better qualified than he to perform this function, which was equally dear to his understanding and his heart. With the virtues, the frankness, the disinterestedness, and almost the carelessness of that amiable age, it was by no means difficult for him to adapt himself to the comprehension of his young readers. A love of virtue, a tender sensibility, a love of industry, an attachment to duty, filial piety, firmness, and fortitude, are the principal subjects of his lessons, where morality hides itself under the transparent vail of interesting
and

and amusing fiction. It is true that Berquin borrowed much from Weisse, Campe, and Schummael, German writers, who have occupied themselves with an age too much neglected; but far from confining himself to the merit of a translator, Berquin did not fail to accommodate to the taste of his countrymen, their manners and customs, all that he derived from these estimable sources, and the materials lost nothing by passing through his hands. He even took a voyage to England, for the sake of becoming acquainted with valuable English books on similar topics with his own.

After the Revolution, the desire of being useful led him to undertake a work intended to inform the villager of his rights and his duties. He only published two or three volumes of "the Village Library;" and, after the death of Marcilly, who edited the "Monitor," Berquin undertook his office, which he continued till his death.

With sweet and equable manners, a lively disposition, and an excellent and unintriguing heart, aspiring neither after fortune nor place, nothing was wanting to his happiness but to have tasted, in the bosom of domestic peace, those sweet parental pleasures which his pen had so touchingly depicted. Berquin was never married.

He had never known sickness till a putrid and malignant fever, which attacked him with such violence as to leave little hope from the resources of art, on the 21st of December, 1791, snatched him from letters and from friendship.

THE RIVER.

"**H**OW happens it, papa, that the river, which is commonly so peaceful and so clear, that it resembles a large looking-glass, is to-day so swelled and yellowish?"

"My dear, that is because the stormy south winds have brought down torrents of rain, which have drawn all the impurities of the fields into the river. A peaceful and innocent heart is like the surface of the water when it is limpid. Heaven and earth paint themselves upon it in all their beauty; one may read to the bottom of it. It is thus, my child, that I can still read in your's; but if stormy passions should one day rise in your breast, your heart will be like this river, swelled and dusky, my eyes will no longer be able to read in it, and it can no longer reflect the beauty of heaven."

FIRST PRIZE ESSAY,

On the Subject proposed for No. 17.

A CRITICAL EXAMINATION

OF THE

SPECTATOR, No. 465.

By Master THOMAS TAYLOR,

Of Middleton School, aged 14 years and 11 months.

SENTENCE the first. "Having endeavoured, in my last Saturday's paper, to shew the great excellency of faith, I shall here consider what are the proper means of strengthening and confirming it in the mind of man."

This sentence is, on the whole, very clear and perspicuous, preserving a very good harmony in its parts. Perhaps an objection might be made against having "here" the consequent to the antecedent "in my last Saturday's paper."

Sentence the second and third. "Those who delight in reading books of controversy, which are written on both sides of the question in points of faith, do very seldom arrive at a fixed and settled habit of it. They are one day entirely convinced of its important truths, and the next meet with something that shakes and disturbs them,"

In the first of these sentences there are some words useless, and as every part ought to convey some new idea, it is needless to say "reading books of controversy, which are written on both sides of the question." For if they be of controversy, they must be on different sides of the question; therefore, both to make the sentence more harmonious, and not leave the redundancy, I would abbreviate it thus: "reading books written on both sides of the question in points of faith;" also I would omit "do," and leave it "seldom arrive," &c.; and perhaps a "habit" is not so applicable to faith. The third sentence is very clear, correct, and musical.

Sentence the fourth. "The doubt which was laid revives again, and shews itself in new difficulties, and that generally

nerally for this reason, because the mind which is perpetually tost in controversies and disputes, is apt to forget the reasons which had once set it at rest, and to be disquieted with any former perplexity, when it appears in any new shape, or is started by a different hand."

This sentence is very confused, and perspicuity is by no means observed in it. It is an excellent metaphor to say "revives;" but it is superfluous to add "again" after it, for it signifies that of itself. It is highly improper to say a "perplexity *started* by a different hand."

Sentence the fifth and sixth. "As nothing is more laudable than an enquiry after truth, so nothing is more irrational than to pass away our whole lives without determining ourselves one way in those points which are of the last importance to us. There are, indeed, many things from which we may withhold our assent; but in cases by which we are to regulate our lives, it is the greatest absurdity to be wavering and unsettled, without closing with that side which appears the most safe and most probable."

The word "whole," in the first of these sentences, is not wanting; for if "we pass away our lives," undoubtedly we shall pass away our "whole" lives. In the next sentence, "the safest and most probable" would do better than "the most safe and most probable;" and this sentence is lengthened out at the end too much, which tires the voice.

Sentence the seventh and eighth. "The first rule, therefore, which I shall lay down is this, that when by reading or discourse we find ourselves thoroughly convinced of the truth of any article, and of the reasonableness of our belief in it, we should never suffer ourselves to call it into question. We may, perhaps, forget the arguments which occasioned our conviction, but we ought to remember the strength they had with us, and therefore still to retain the conviction which they once produced."

At the beginning of this sentence "therefore" ought to be omitted, for it ought never to be used but where a conclusion is drawn from a reason before given; and as there is

no reason why he should set down that rule, it is evident that here it is useless. It would be more musical to say "by reading or discoursing," than "by reading or discourse;" besides the conjunction "or" couples like parts of speech. The next sentence is very clear, precise, and harmonious, and as correct as the English language, perhaps, will admit of.

Sentence the ninth. "This is no more than what we do in every common art and science, nor is it possible to act otherwise, considering the weakness and limitation of our intellectual faculties."

As it has been observed that short words are unfit for the beginning of a sentence, the author is very faulty in placing no less than nine monosyllables at the beginning. "Weakness and limitation" are well applied to our "intellectual faculties."

Sentence the tenth. "It was thus that Latimer, one of the glorious army of martyrs, who introduced the reformation in England, behaved himself in that great conference, which was managed between the most learned amongst the Protestants and Papists, in the reign of Queen Mary."

There is some ambiguity here, for we cannot tell "who introduced the reformation in England," whether it was Latimer, or "the glorious army of martyrs." Perhaps it would answer better if thus altered: "It was thus that Latimer, one of the glorious army of martyrs, and introducer of the reformation," &c. The rule of unity is entirely broken through here; first the author mentions *Latimer*, then the *glorious army of martyrs*, then the *reformation* in England, then the *conference* between the Protestants and Papists, and, finally, the *reign* of Queen Mary.

Sentence eleventh. "This venerable old man, knowing how his abilities were impaired by age, and that it was impossible for him to recollect those reasons which had directed him in the choice of his religion, left his companions, who were in full possession of their parts and learning, to baffle and confound their antagonists by the force of reason."

This is very correct, and the words well chosen, possessing a proper degree of harmony.

Sentence the fourteenth. "This rule is absolutely necessary for weaker minds, and in some measure for men of the greatest abilities; but to these last I would propose, in the second place, that they should lay up in their memories, and always keep by them in a readiness, those arguments which appear to them of the greatest strength, and which cannot be got over by all the doubts and cavils of infidelity."

If the sentence were divided in two, as can be done, it would not then tire the voice as it does. The propriety of the word "cavils" is worth remarking; for when we are conscious of the rectitude of faith, certainly all the arguments that can be suggested must be frivolous.

Sentence the fifteenth, sixteenth, and seventeenth. "But, in the third place, there is nothing which strengthens faith more than morality. Faith and morality naturally produce each other. A man is quickly convinced of the truth of religion, who finds it is not against his interest that they should be true."

These three sentences are very correct and elegant, and the beauty of short enlivening ones is chiefly conspicuous. Perhaps, indeed, there might be an objection made to having so many monosyllables at the beginning.

Sentence the eighteenth. "The pleasure he receives at present, and the happiness which he promises himself hereafter, will both dispose him very powerfully to give credit to it, according to the ordinary observation, that we are easy to believe what we wish."

"The happiness" is redundant, and only repeating "the pleasure;" I would thus transpose it, "and that which he promises himself hereafter," &c.—"will both dispose." This affords me an opportunity of showing the difference between *will* and *shall*. *Will*, in the first person, implies determination, *shall* simply foretells; in the third person *will* serves merely to foretel, *shall* implies acting under an injunction or force.

Sentence

Sentence the nineteenth. "It is very certain, that a man of sound reason cannot forbear closing with religion upon an impartial examination of it; but, at the same time, it is certain, that faith is kept alive in us, and gathers strength from practice more than from speculation."

Again, the impropriety of beginning with "It is" occurs. The conclusion if altered thus would, perhaps, be better: "and gathers strength *more* from practice than speculation."

Sentence the twentieth and twenty-first. "There is still another method, which is more persuasive than any of the former, and that is, an habitual adoration of the Supreme Being, as well in constant acts of mental worship, as in outward forms. The devout man does not only believe but feels there is a deity."

The language of all this is clear and correct; but "and" is superfluous. In the last of these sentences, "not only believes," would do better than "does not only believe," as, besides, it would correspond better with "feels."

Sentence the twenty-second and twenty-third. "He has actual sensations of him; his experience concurs with his reason; he sees him more and more in all his intercourses with him, and even in this life almost loses his faith in conviction. The last method which I shall mention for the giving life to a man's faith, is frequent retirement from the world, accompanied with religious meditation."

Sentences like the first are very pleasing to the reader, sound better, and give proper time for drawing breath. This is so nicely divided in small clauses, which are so clear, so uniform, and so harmonious, that they delight and express themselves much more attractingly than such a sentence as the fourth; and if we read them alter one another, we shall immediately decide in favour of the former.

Sentence the twenty-fourth and twenty-fifth. "When a man thinks of any thing in the darkness of the night, whatever deep impressions it may make in his mind, they are apt to vanish as soon as the day breaks about him. The light

and noise of the day, which are perpetually soliciting his senses, and calling off his attention, wear out of his mind the thoughts that imprinted themselves in it during the silence and darkness of the night."

In the first of these sentences I cannot help observing the applicable and elegant sense of the word "vanish;" in the next "the light and noise" are nicely opposed to "the silence and darkness."

Sentence the twenty-sixth and twenty-seventh. "A man finds the same difference as to himself in a croud and in a solitude; the mind is stunned and dazzled amidst that variety of objects which press upon her in a great city. She cannot apply herself to the consideration of those things which are of the utmost concern to her."

The metaphor is well applied in the words "stunned" and "dazzled," which are very expressive. There is a grammatical error in making the singular nominative case agree with a plural verb, i. e. "that *variety* of objects, which *press* upon her," &c.; certainly if "*variety*" be considered as a noun of multitude it might be right, were it not for "*that*" which precedes it, and marks it particularly as singular. The next sentence is very perspicuous and concise.

Sentence the twenty-eighth. "The cares or pleasures of the world strike in with every thought, and a multitude of vicious examples give a kind of justification to our folly."

This is all compact and precise; but I cannot help observing the propriety of the words "strike in," which are very beautiful.

Sentence twenty-ninth, thirtieth, and thirty-first. "In our retirements every thing disposes us to be serious. In courts and cities we are entertained by the works of men: in the country by those of God. One is the province of art, the other of nature.

Again we find all the beauty and lustre of short lively sentences break forth. How much is expressed in these few?

Sentence thirty-second. "Faith and devotion naturally grow

grow in the mind of every reasonable man, who sees the divine power and wisdom in every object on which he casts his eye."

This sentence would all be very clear and correct, were it not for so many monosyllables at the end, which ought to be omitted, as it is redundant to say "who sees in every object on which he casts his eye;" for if he "sees" he must "cast his eye," therefore this might be left out, and it would make the sentence more compact.

PRIZE TRANSLATION FROM THE ITALIAN.

LIFE OF MADAME DACIER.

By Master J. W. MACKIE, aged 14.

Son of Doctor Mackie, of Southampton.

ANNE DACIER, daughter of Tanaquil Faber, (or Lefevre) Greek Professor at Saumur, one of the most learned women of her age, from her earliest years discovered a talent for the sciences, which her father cultivated with pleasure and assiduity.

After the death of M. Lefevre she went to Paris, where her fame had already made her known. At that time she was preparing an edition of Callimachus, which she published in 1674. Having shewn some of her performances to M. Huet, and other of the literati of the court, her works were so much admired, that the Duke de Montausier intreated her to publish editions of different Latin authors for the use of the Dauphin. She at first excused herself; but the Duke, having made her a visit, persuaded her to consent, and she undertook the edition of Florus, which appeared in 1674.

Her reputation being extended over all parts of Europe, Queen Christina, of Sweden, desired the Count de Conygmars to compliment her in her name. Tanaquil's daughter then sent to this princess her edition of Florus, accompanied with a Latin letter. Her majesty answered her in an obliging manner, and some time after wrote her another letter, to beg that she would renounce the Protestant religion,

gion, and made her considerable offers to bring her to her court.

Mademoiselle Lefevre married M. Dacier in 1683, and immediately acquainted the Duke de Montausier with the intention she then had of returning to the Roman church. But as M. Dacier was not convinced of the necessity of such a change, he retired with his wife to Castres, in 1684, to examine the controversial points between the Protestants and Catholics. After a mature examination they determined in favour of the latter, and made a public abjuration in 1685.

Lewis the Fourteenth, being informed of their merit, gave each of them, in the sequel, the most effectual proofs of his esteem.

They had a son and two daughters. The son, who was a promising youth, died in 1694; one of the daughters took the veil in the abbey of Longchamp. The other, who was a perfect model of the best qualities which adorn her sex, died at the age of eighteen.

Madame Dacier was in a very infirm state of health the two last years of her life, and died on the 17th of August, 1720, in her sixty-ninth year, having acquired the esteem of all, not only from her erudition and superior genius, but much more for her virtue, constancy, magnanimity, and generosity.

Her principal works are, 1. An excellent translation of Terence, with various comments, the best edition of which is that printed in Holland. 2. A translation of the Iliad and Odysey of Homer, with notes. 3. A translation of Anacreon, a part of Plautus and Aristophanes. She had likewise made various remarks on the Holy Scriptures, which she was several times intreated to give to the public, but she always answered, that a woman ought to read and meditate on the Scriptures, to be able to regulate her conduct by what they teach, but that she ought to keep silence, according to the precept of St. Paul.

GENERAL ADJUDICATION OF THE PRIZES

GIVEN WITH THE SEVENTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

A Critical Examination of No. 465 of the Spectator.

The first prize has been awarded to Master THOMAS TAYLOR, of Middleton School, aged 14 years and 11 months. Attested by Mr. Grier, head master.

To receive Books, value Three Guineas.

The second to Master SAMUEL MARSOM, of Mr. Osborn's academy, Worcester, aged 16. Attested by Mr. Osborn.

To receive a Silver Medal, value Half-a-guinea.

The third to Miss MARY PARKEN, of Dunstable, aged 15. Attested by her father.

To receive Dr. Gregory's Elements of a Polite Education.

The fourth to Miss MARY ANNE ORMSTON, of Newcastle, aged 16. Attested by her mother.

To receive Irvine's Elements of English Composition.

The fifth to Miss J. A. SMITH, of Whittlesea, aged 12. Attested by her tutor, the Rev. G. Burges.

To receive Dr. Mavor's Plutarch.

The sixth to Master JOSEPH FALLOWFIELD, of Barnard-Castle School, aged 14 years and seven months. Attested by the Rev. Thomas Barnes, master.

To receive Goldsmith's History of England.

The seventh to Master H. WALTER, of Brigg School, aged 16.

16. Attested by the Rev. Mr. Walter, master, and Mr. Border, usher.

To receive Pratt's and Mavor's Classical English Poetry,

The eighth to Master MAJOR AINGER, of Whittlesea, aged

15. Attested by the Rev. G. Burges.

To receive Irvine's Elements of English Composition.

The ninth to Master JOSIAH CONDER, of Messrs. Palmers' School, Hackney, aged 11 years and nine months. Attested by Mr. Palmer.

To receive Pratt's and Mavor's Classical English Poetry.

The tenth to Miss ELIZ. AINGER, of Whittlesea, aged 13. Attested by her tutor, the Rev. G. Burges.

To receive Dr. Gregory's Legacy to his Daughter.

The following are deserving of COMMENDATION:

Master *John Agg*, not 17, pupil of the Rev. W. Day, curate of Bengworth, Worcester.

Miss *Maria Bakemah*, not 17 years of age, at Mrs. Hanwell's school, Grove-house, Kentish Town.

Master *G. F. Dickson*, 14 years of age, at Messrs. Palmers' school, Hackney.

Master *George Edwards*, under 15 years of age, at Barnard-Castle school.

Master *Daniel Harvey*, 15 years and 5 months old, at Messrs. Palmers' academy, Hackney.

Master *William Wood*, 14 years and 7 months old, at Barnard Castle school.

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND
SUBJECT.

TRANSLATION FROM THE ITALIAN.

LIFE OF MADAM^e DACIER.

The first prize has been awarded to Master J. W. MACKIE, son of Dr. Mackie, of Southampton, aged 14. Attested by his father and M. Desmoulins.

To receive Books, value two guineas.

The second to Miss SOPHIA TONGUE, of Croom's-hill boarding-school, Greenwich, aged 14 years and two months. Attested by Mrs. Smallwood.

To receive a silver medal, value five shillings.

The third to Miss MARY LLOYD, of Peterley-House, aged 12. Attested by her mother, and Mrs. Kralie, governess.

To receive Pratt's and Mavor's Classical English Poetry.

The fourth to Miss LOUISA ELIZ. TAYLOR, of Fitzroy-square, aged 14. Attested by C. B. Reynolds, master of languages.

To receive Dr. Mavor's Natural History.

The fifth to Master B. JONES, of Messrs. Palmers' school, Hackney, aged 14. Attested by Mr. Paris, classical tutor.

To receive Dr. Mavor's British Nepos.

The sixth to Master C. W. THOMPSON, aged 13 years and five months, of Thorp-Arch Seminary. Attested by the Rev. Mr. Peers.

To receive Dr. Gregory's Elements of a Polite Education.

The seventh to Miss MARGARET TAYLOR, of Homerton, aged 12, having never received instructions in Italian from a master. Attested by Mrs. Hurry, her aunt.

To receive Pratt's and Mavor's Classical English Poetry.

The

The eighth to Master H. GREEN, of the seminary Thorp-Arch, aged 13. Attested by the Rev. Mr. Peers, rector.

To receive Dr. Mavor's Lives of Plutarch abridged.

The following are deserving of COMMENDATION :

Miss *Martha Atterfoll*, aged 13 years, of Mrs. Walker's school at Grays.

Master *Arthur Burrow*, not 14, pupil of Mr. T. Vivier, Warrington.

Miss *Bella Barrow*, aged 12 years and 3 months, of Devonshire-square, pupil of Dr. Antonio Montucci, private master.

Master *W. H. Coates*, aged 14, of the seminary at Thorp-Arch.

Master *Josiah Conder*, 11 years old, of Messrs. Palmers' academy, Hackney.

Master *Francis Cohen*, under 13, of Southampton-street, Bloomsbury, private pupil of Mr. J. Wills.

Master *Thomas Tenant Coar*, aged 14 years and 11 months, at Mr. J. Forster's school, Tottenham High Cross.

Master *G. F. Dickson*, 14 years of age, at Messrs. Palmers' school, Hackney.

Miss *Henrietta Eyre*, 15 years of age, at Mrs. Lorient's school, Reading.

Master *Moses Asker Goldsmid*, of Leman-street, aged 12 years and a half, pupil of Dr. Antonio Montucci.

Master *John Gregory*, 12 years and eight months old, at Messrs. Palmer's academy, Hackney, *who had never been taught.*

Miss *Eliza Hammond*, 13 years and six months old, pupil of Mrs. L. Mondenard, Liverpool.

Master *James Lawson*, 14 years and five months old, son of Mr. Samuel Lawson, Nottingham.

Miss *Hetty Sinclair*, aged 13 years, residing at Dr. Gregory's Low Leyton.

Master *G. R. E. Wilcocke*, aged 14 years and two months, at Messrs. Palmers' academy, Hackney.

Master *Thomas Sydney Williams*, not 15, son of Mr. Thomas Williams, Nottingham.

ADJUDICATION

ADJUDICATION OF THE BOOK-KEEPING PRIZES.

Four candidates have appeared for Mr. FRAZER's prizes in Book-keeping, and their respective merits appear to us as follow :]

To Master CHAMBERS HALL, of Englefield-green Academy, in Surry, we have assigned the first prize of two guineas and a silver medal, value ten shillings and sixpence, his being the neatest and most correct set of books. His age is 14 years and 10 months. Attested by Mr. Wicks, the master.

The second we have adjudged to Master SAMUEL WRIGHT, of the same academy, aged 15. Attested by Mr. Wicks.

To receive one guinea, and a silver medal value ten shillings and sixpence.

The third to Master FRANCIS WILBY, of Mr. Littlewood's academy, Rochdale, aged 15. Attested by Mr. Littlewood.

To receive sixteen shillings, and a silver medal value five shillings.

To Master THOMAS BUDD, of Laytonstone Academy, (though his books are evidently erroneous, having made Prettyman's nett property at the end of the year less than at the beginning of it, and yet supposing a profit on his trade of 3991l. 17s. 2½d.) we have, in consequence of his meritorious endeavour, assigned a prize of five shillings, viz. Mr. Friend's Algebra.

In consequence of this adjudication the arithmetical prizes are left undecided, and open till the 10th of next month.

NEW PRIZE SUBJECTS FOR No. XX.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of September.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

To shew by argument and example whether the vice of Slander or of Theft has done most mischief in the world.

The best essay to entitle the writer to Books, value three guineas; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS

CLASS II.

TRANSLATION FROM THE LATIN.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

A poetical version of the following ode:

HOR. LIB. III. ODE III.

Justum, et tenacem propositi virum,
Non civium ardor prava jubentium,
Non vultus instantis tyranni
Mente quatit solida, neque Auster
Dux inquieti turbidus Adriæ,
Nec fulminantis magna Jovis manus:
Si fractus illabatur orbis,
Impavidum ferient ruinæ.
Hac arte Pollux, et vagus Hercules
Innixus, arces attigit igneas:
Quos inter Augustus recumbens,
Purpureo bibit ore nectar.
Hac te merentem, Bacche pater, tuæ
Vexere tigres, indocili jugum
Collo trahentes: hac Quirinus
Martis equis Acheronta fugit;
Gratum elocuta consiliantibus
Junone Divis: Ilion, Ilion
Fatalis incestusque iudex,
Et mulier peregrina vertit
In pulverem, ex quo destituit Deos
Mer cede pacta Laomedon, mihi
Castæque damnatum Minervæ,
Cum populo et duce fraudulento.

The best translation to be entitled to books, value two guineas; the second to a silver medal, value half-a-guinea; and the six next to books, value five shillings each.

CLASS III.

PENMANSHIP.

TO BOYS NOT EXCEEDING THIRTEEN.

It is required to send in specimens of Penmanship in three hands, upon paper not exceeding seven inches and a half by six inches.

The best specimen to be engraven for insertion in the Preceptor, and the writer to be entitled to a book of Penmanship, value one guinea, and to a silver medal, value half-a-guinea; the second best to a silver medal, value half-a-guinea; and the six next best to a silver pen each.

Mechanics.

Fig. 1.

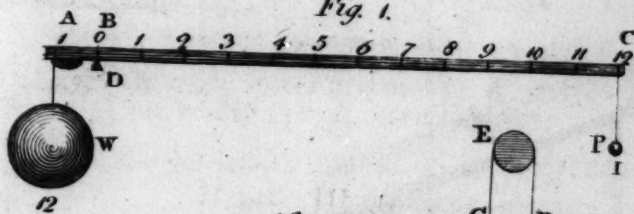


Fig. 2.

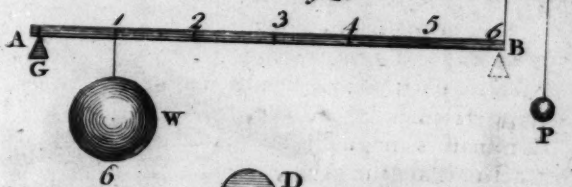


Fig. 3.

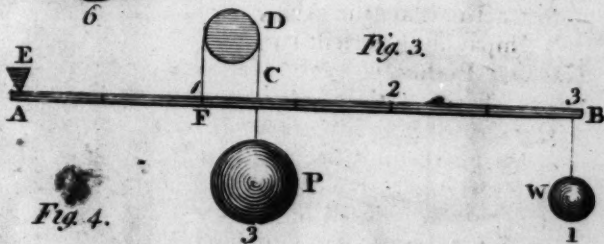


Fig. 4.

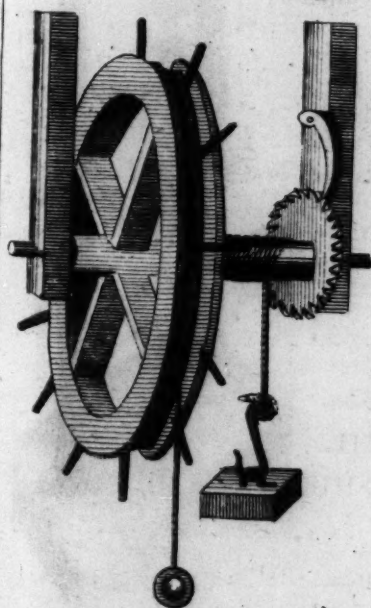


Fig. 5.

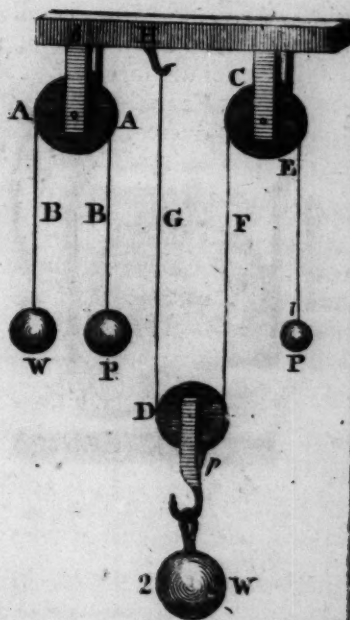


Fig. 6.

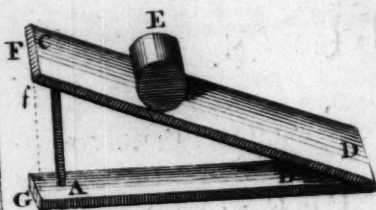


Fig. 7.

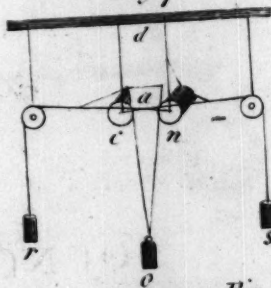


Fig. 8.

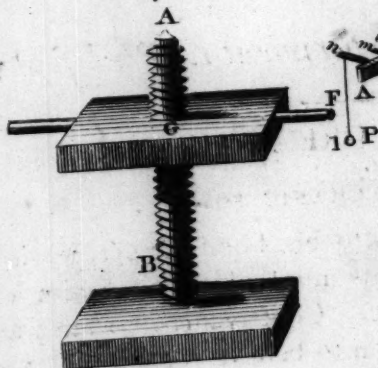


Fig. 9.

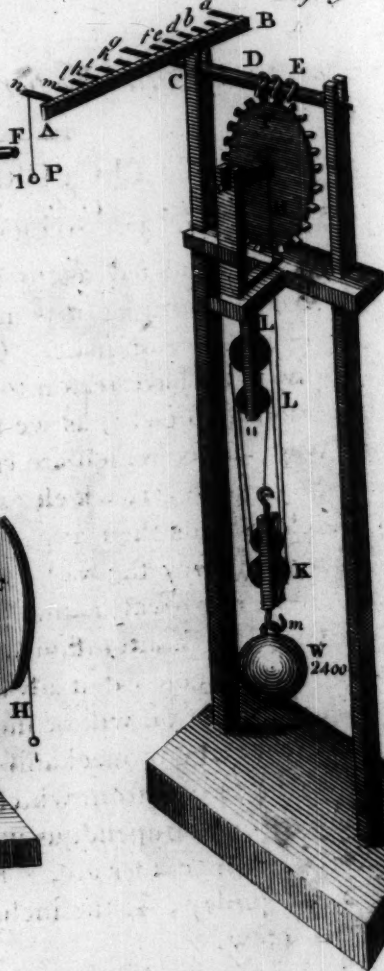
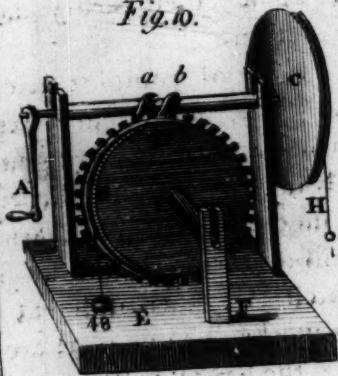


Fig. 10.



JUVENILE ENCYCLOPEDIA.

LECTURES,

ADAPTED TO THE CAPACITIES OF

YOUNG PERSONS,

ON

Natural and Experimental Philosophy.

LECTURE XVIII.

OF THE MECHANIC POWERS.

MAN, considered as to his bodily structure, is but a feeble creature; it is mind which gives him a superiority over other animals. Contrivances to assist his natural powers we have reason to believe took place at a very early period of society, as we find few nations, even in the most savage state, which are entirely without them. It is philosophy, however, which explains their theory and uses, and which extends their application.

When we survey the vast variety of complex machines, which one of our great manufactories, for instance, exhibits, we are struck with astonishment, and the creative genius of man appears to the greatest advantage; but the surprize of the unscientific person will be increased, when he learns that this vast assemblage of mechanism is reduced into six simple machines or powers, from which, and their different combinations, the most stupendous works of human art are produced. These machines are, 1. the lever; 2. the wheel and axle; 3. the pulley; 4. the inclined plane; 5. the wedge; and 6. the screw.

1. The lever is, perhaps, the simplest of all the mechanic powers, and was probably the first which was brought into use. It is a bar of iron or wood, one part of which is supported by a prop, and upon that prop all the other parts turn as on their center of motion. You see the lever made use

of in one form or other every day, when a labourer takes a hand-spike, or large stake, and putting a stone under some part near the end, by putting the extremity under a cask, a piece of timber, or any other body, and attempts to move it, by pulling at the other end, he makes use of a lever. The handle of a pump is a lever also; even the poker with which I raise the fire is a lever, the bar of the grate is the prop, and the end which I hold in my hand is the strength or power. This is, however, not the only kind of lever, for in fact there are three different sorts or orders of these instruments. The first is that which I have been describing, viz. when the prop is placed between the weight to be raised and the power (see fig. 1). In this figure ABC is the lever, and D is the fulcrum or prop; and the parts AB and BC, on different sides of the prop, are called the arms of the lever. It is obvious that in this instrument the nearer the prop is to the end A, and the longer the arm BC is, the less force will be required to effect any given purpose. This is, indeed, reduced to a matter of calculation. For let P represent a power, whose gravity is equal to one ounce; and W a weight, whose gravity is equal to twelve ounces. Then, if the power is twelve times as far from the prop as the weight is, they will exactly counterpoise; and a small addition to the power P will cause it to descend, and raise the weight W; and the velocity with which the power descends will be to the velocity with which the weight rises, as twelve to one: that is, directly as their distances from the prop; and consequently, as the spaces through which they move. Hence it is plain that a man who, by his natural strength, without the help of any machine, could support a hundred weight, will, by the help of this lever, be enabled to support twelve hundred. If the weight is less, or the power greater, the prop may be placed so much farther from the weight, and then it can be raised to a proportionably greater height. For, universally, if the intensity of the weight multiplied into its distance from the prop is equal to the intensity of the power multiplied into its distance from the prop, the power and weight will exactly balance each other; and a little addition to the power will raise the weight. Thus, in the present instance, the weight W is

twelve

twelve ounces, and its distance from the prop is one inch; and twelve multiplied by one is twelve; the power P is equal to one ounce, and its distance from the prop is twelve inches, which multiplied by one is twelve again; and therefore there is an equilibrium between them. So, if a power equal to two ounces is applied at the distance of six inches from the prop, it will just balance the weight W ; for six multiplied by two is twelve, as before. And a power equal to three ounces placed at four inches distance from the prop would be the same; for three times four is twelve; and so on, in proportion.

The *statera*, or Roman *steelyard*, is a lever of this kind, and is used for finding the weights of different bodies by one single weight placed at different distances from the prop or center of motion D . For if a scale hangs at A , the extremity of the shorter arm AB , is of such a weight as will exactly counterpoise the longer arm BC ; if this arm is divided into as many equal parts as it will contain, each equal to AB , the single weight P (which we may suppose to be one pound) will serve for weighing any thing as heavy as itself, or as many times heavier as there are divisions in the arm BC , or any quantity between its own weight and that quantity. As for example, if P is one pound, and placed at the first division one in the arm BC , it will balance one pound in the scale at A ; if it is removed to the second division at two, it will balance two pounds in the scale; if to the third three pounds; and so on to the end of the arm BC . If each of these integral divisions is subdivided into as many equal parts as a pound contains ounces, and the weight P is placed at any of these subdivisions, so as to counterpoise what is in the scale, the pounds and odd ounces will by that means be ascertained.

To this kind of lever may be reduced several sorts of instruments, such as scissars, pincers, snuffers, which are made of two levers acting contrary to one another, their prop or center of motion being the pin which keeps them together.

The second kind of lever has the weight to be raised between the prop and the power. Thus, in raising the water plug in the streets of London, you will see the workman put his iron crow through the hole of the plug till he rests

the further extremity of it on the ground, and making that his prop, he raises the lever or crow, and draws out the plug. In this lever, as in the former, the longer the arm of power is, or the greater the distance of the workman from the weight, the more is his natural force assisted by the machine. To estimate this, if AB (fig. 2) is a lever on which the weight W of six ounces hangs at the distance of one inch from the prop G, and a power P equal to the weight of one ounce hangs at the end B, six inches from the prop, by the cord CD going over the fixed pulley F, the power will just support the weight; and a small addition to the power will raise the weight one inch for every six inches that the power descends.

This lever shews the reason why two men carrying a burden upon a stick between them, bear unequal shares of the burden in the inverse proportion of their distances from it. For it is well known, that the nearer any of them is to the burden the greater share he bears of it; and if he goes directly under it he bears the whole. So if one man is at G, and the other at P, having the pole or stick AB resting on their shoulders; if the burden or weight W is placed five times as near as the man at G, as it is to the man at P, the former will bear five times as much weight as the latter. This is likewise applicable to the case of two horses of unequal strength to be so yoked, as that each horse may draw a part proportionate to his strength; which is done by so dividing the beam they pull, that the point of traction may be as much nearer to the stronger horse than to the weaker, as the strength of the former exceeds that of the latter.

To this kind of lever may be reduced oars, rudders of ships, doors turning upon hinges, cutting-knives which are fixed at the point of the blade, &c.

The third kind of lever is when the power is placed between the weight and the prop. An example of this kind of lever you see when a man raises a long ladder to place it against a wall. It is obvious that this kind of lever, so far from assisting human strength, requires a power much greater than the weight to be raised. For let E (fig. 3) be the prop of the lever AB, and W a weight of one pound, placed three times as far from the prop, as the power P acts at F,

by

by the cord C going over the fixed pulley D; in this case the power must be equal to three pounds, in order to support the weight.

Disadvantageous as this kind of lever appears, it is upon this principle the human arm is constructed; for the muscle which moves the arm, and which is inserted in the bone below the elbow, may be considered as the power, which you see is placed between the weight to be raised by the hand and the prop, or place where the muscle is inserted above. To compensate for this disadvantage these muscles are made unusually strong, and we may judge of their immense power by the weights which athletic persons are enabled to wield. The same power exerted only on equal terms ought to raise a weight of ten thousand pounds.

II. The *wheel and axle* (fig. 4) is the next in order of the mechanic powers. The power is, in this machine, applied to the circumference of the wheel, and the weight to be raised is fastened to one end of a rope, whose other end winds round an axle that turns with the wheel. This instrument is more commonly used with an handle: thus, to wind up a jack, I turn the handle, which coils the cord round the axle in the middle: to wind a bucket from a well I do the same thing; to wind up my watch the same: the handle in all these is in the place of a wheel, and the farther this handle is from the center, the axle, on which the whole weight is sustained, the more powerful will it be. Or if it is a wheel, the more its diameter exceeds the diameter of the axle, the greater will be its power. Thus, if the wheel is eight times as wide as the axle is thick, it will have eight times the power; and a man who, by his natural strength, could only lift an hundred weight, by this machine will be enabled to lift eight hundred.

Of this kind are the machines called *cranes*; which you see employed at the water-side, for winding up bales of goods out of ships. The large circular crane, in which a man or horse walks and turns it horizontally, is also a machine of this nature; and the *capstan*, which draws up the cables of ships, and is turned by handspikes inserted in holes at the end of the roller or capstan. The *windlass*, also used in warehouses for raising goods, is the wheel and axle; and,

indeed, many more complex machines may be resolved into this principle.

The spokes of the wheel, or the winch which turns the axle, may be considered as levers, and therefore by some the wheel and axle is referred to the same principle.

III. The *pulley* is usually considered as the third mechanic power, though, in truth, the single pulley AA (fig 5) gives no mechanical advantage, and only enables us to change the direction. This is evident from the figure, where the two equal weights W and P balance each other as exactly as the arms of a balance or scale beam, which are of equal lengths. Thus it gives a man no advantage, except that he can apply his weight instead of his strength in raising a body from the earth, but still he can lift no more than his own weight.

With a combination of pulleys, however, the case is different. For if a weight W hangs at the lower end of the moveable pulley D, and the cord GF goes under the pulley, and is fixed at the top of the hook H on one side, and nailed to the block C on the other; it is evident that H and C between them support the whole weight W; H supports one half, and C the other half. Now suppose I take the support of one of their halves upon myself, but merely change the direction of my power, and instead of holding up the cord at C, throw it over the immoveable pulley fixed there; and exert my strength below at P; it will be evident that I support one half the weight W, and the hook H supports the other. If therefore I draw the cord at P, the weight W will continue to rise, but wherever it rises, I continue to support but half of its weight, while H supports the other. Thus, one single moveable pulley diminishes one half of the weight to be raised; if we should add another, it would diminish the half of that which remained, and so on. For instance, if a weight of eight hundred pounds is to be raised, I use one moveable pulley, and that will lessen the weight one half, that is, to four hundred; I add another moveable pulley, and that will lessen the remaining four by one half, which is two hundred; if I still add a third, that will lessen the remaining two by one half, which is one; so that if I use three moveable pulleys in raising eight hundred weight, I shall

shall be able to raise it with as much ease as one hundred without them.

As a system of pulleys have no great weight, and lie in a small compass; they are easily carried, and can be used in many cases where more cumbrous engines cannot. They have much friction, however, because the diameter of their axis bears a very considerable proportion to their own diameter, because they are apt to rub against each other, or against the sides of the block, and because the rope that goes round them is never perfectly pliant.

IV. The *inclined plane* is very justly regarded as the fourth mechanic power, though some have rejected it altogether. The advantage of this machine (if you will admit of that term) is, that by means of it a heavy body may be made to ascend a given height with much less power than it would require to raise it the same height if it was perpendicular. This is a very common mode of assisting human strength; you will see every day porters, when they have to roll a cask or bale up the step of a warehouse, place a board along from the step to the ground, which renders the ascent gradual and easy. The power of the inclined plane is as great as its length exceeds its perpendicular height. For instance, let AB (fig. 6) be a plane parallel to the horizon, and CD a plane inclined to it; and suppose the whole length CD to be three times as great as the perpendicular height GF: in this case the cylinder E will be supported upon the plane CD, and kept from rolling down upon it by a power equal to a third part of the weight of the cylinder. Therefore, a weight may be rolled up this inclined plane with a third part of the power which would be sufficient to draw it up by the side of an upright wall. If the plane was four times as long as high, a fourth part of the power would be sufficient; and so on, in proportion. Or, if a weight was to be raised from a floor to the height GF, by means of the machine ABCD, (which would then act as a half wedge, where the resistance gives way only on one side) the machine and weight would be *in equilibrio* when the power applied at GF was to the weight to be raised, as GF to GB; and if the power is increased, so as to overcome the friction of the machine against the floor and weight, the machine will be driven,

driven, and the weight raised; and when the machine has moved its whole length upon the floor, the weight will be raised to the whole height from G to F.

V. The *wedge* is nearly allied to the inclined plane; indeed it may properly be considered as two equally inclined planes joined together. You know that its uses are to cleave or separate wood or stone, or any heavy bodies that adhere together. The power of the wedge is as its length to the thickness of its back. To shew how we may calculate the force of a wedge, let *a* (fig. 7) be a wedge, which is interposed between the two cylinders *r* and *s*, which are pulled against the wedge by the two weights *r* and *s*, representing the resistance to be overcome by the force of the wedge. If then *r* and *s* influence the cylinders each with a force equal to two pounds, the resistance to be overcome will be equal to four pounds. Now the length of the wedge *a* is twice the thickness of its back, and the weight *o*, suspended to it, is two pounds. Here, then, is a resistance equal to four pounds overcome by a weight of two pounds, by means of a wedge, the length of which is double the thickness of its back. This explains sufficiently what a wedge will be able to effect by simple weight or pressure; but we see every day, where a hard stone or a piece of tough wood is to be cleft by a wedge, that a ton weight would not force it in, when a smart stroke of a hammer, which has not a fortieth part of that weight, will effect it at once. In this case we are to have recourse to what was said in the last lecture on the momentum or force which is gained by the velocity of a moving body, and consider that the momentum of a hammer consists of its weight multiplied by the velocity with which it moves (which is considerable), and then the effect will appear less extraordinary.

VI. The *screw* (fig. 8) may properly be considered as an inclined plane wrapped round a cylinder. The power of the screw is therefore as the length of each spiral or thread is to its height, or, in other words, as the circumference of the threads to their distance from one another. The screw, however, can only be wrought by means of a handle or winch, which is, in fact, a *lever*, and it may, therefore, be regarded as a compound machine. To estimate its force, then,

then, let us suppose that I desire to screw down the press *G* upon *B*; every turn I make once round with both handles, I shall drive the press only one spiral nearer to *B*; so that if there are eleven spirals, I must make eleven turns of the handles *FL*, before I come to the bottom. In pressing down the screw, therefore, I act with a force as much superior to the resistance of the body I desire to press, as the circumference of the circle, which my hands describe in turning the machine, exceeds the distance between two little spirals of the screw. For instance, suppose the distance between the two spirals to be half an inch, and the length of both handles twelve inches. My hands placed upon them in going round will describe a circle, which, upon calculation, will be found to be seventy-six inches nearly, and consequently this will be an hundred and fifty-two times greater than half an inch, which was the distance between two of the spirals. Thus, if a body is to be pressed down with this machine, one man will press it, with this assistance, as much as an hundred and fifty-two men without it. Or if the screw was so contrived as to raise the weight instead of pressing it, which it sometimes is, the human force would be assisted in the same proportion with the same instrument. But we here only talk as if the handles of the screw were but twelve inches across, and the spirals a whole half inch distant from each other; what if we suppose the handles five times as long; and the spirals five times as close; the increase of the human force then would be astonishing!

The power of the screw may, however, be still more correctly estimated by what is called the perpetual screw. To explain this, let the wheel *C* (fig. 9) have a screw *ab* on its axle, working in the teeth of the wheel *D*, which suppose to be forty-eight in number. It is plain, that for every time the wheel *C* and screw *ab* are turned round by the winch *A*, the wheel *D* will be moved one tooth by the screw; and, therefore, in forty-eight revolutions of the winch, the wheel *D* will be turned once round. Then, if the circumference of a circle described by the handle of the winch *A* is equal to the circumference of a groove round the wheel *D*, the velocity of the handle will be forty-eight times as great as the velocity of any given point in the groove. Consequently, if

a line

a line G (above number forty-eight) goes round the groove *e*, and has a weight of forty-eight pounds hung to it below the pedestal EF, a power equal to one pound at the handle will balance and support the weight. To prove this by experiment, let the circumferences of the grooves of the wheels C and D be equal to one another; and then if a weight of one pound is suspended by a line going round the groove of the wheel C, it will balance a weight of forty-eight pounds hanging by the line G; and a final addition to the weight, H will cause it to descend, and so raise up the other weight.

If the line G, instead of going round the groove *e* of the wheel D, goes round its axle I; the power of the machine will be as much increased as the circumference of the groove *e* exceeds the circumference of the axle: which, supposing it to be six times, then one pound at H will balance six times forty-eight, or two hundred and eighty-eight pounds hung to the line on the axle: and hence the power or advantage of this machine will be as two hundred and eighty-eight to one. That is, a man who, by his natural strength, could lift a hundred weight, will be able to raise two hundred and eighty-eight hundred by this engine.

But the following engine is still more powerful, on account of its having the addition of four pulleys; and in it we may look upon all the mechanical powers as combined together, even if we take in the balance. For as the axle D of the bar AB (fig. 9) enters its middle at C, it is plain that if equal weights are suspended upon any two pins equidistant from the axis C, they will counterpoise each other. It becomes a lever by hanging a small weight P upon the pin *n*, and a weight as much heavier upon either of the pins *b*, *c*, *d*, *e*, or *f*, as is in proportion to the pins being so much nearer the axis. The wheel and axle H-G is evident; so is the screw E which takes in the inclined plane, and with it the half wedge. Part of a cord goes round the axle, the rest under the lower pulleys K, *m*, over the upper pulleys L, *n*, and then it is tied to a hook at *n* in the lower or moveable block, on which the weight W hangs.

In this machine, if the wheel F has thirty teeth, it will be turned once round in thirty revolutions of the bar AB, which

which is fixed on the axis *D* of the screw *E*: if the length of the bar is equal to twice the diameter of the wheel, the pins *a* and *n* at the ends of the bar will move sixty times as fast as the teeth of the wheel do; and, consequently, one ounce at *P* will balance sixty ounces hung upon a tooth at *q* in the horizontal diameter of the wheel. Then if the diameter of the wheel *F* is ten times as great as the diameter of the axle *G*, the wheel will have ten times the velocity of the axle; and therefore one ounce *P* at the end of the lever *AC* will balance ten times sixty, or six hundred ounces hung to the rope *H* which goes round the axle. Lastly, if four pulleys are added, they will make the velocity of the lower block *K*, and weight *W*, four times less than the velocity of the axle; and this being the last power in the machine, which is four times as great as that gained by the axle, it makes the whole power of the machine four times six hundred, or two thousand four hundred. So that if a man could lift one hundred weight in his arms by his natural strength, he would be able to raise two thousand four hundred times as much by this engine. But it is here as in all other mechanical cases; for the *time lost is always as much as the power gained*, because the velocity with which the power moves will ever exceed the velocity with which the weight rises, as much as the intensity of the weight exceeds the intensity of the power.

The friction of the screw itself is very considerable; and there are few compound engines but what, upon account of the friction of the parts against one another, will require a third part more of power to work them when loaded, than what is sufficient to constitute a balance between the weight and the power.

Some philosophers have considered the wheel and axle, and the system of pulleys as only modifications of the lever; and the wedge and the screw as modifications of the inclined plane. If this is admitted, we shall then have, instead of six, only two mechanical powers. The modifications and combinations of these are, however, almost endless, and wonders are performed, when to these means of increasing force are added the most powerful agents in nature, wind, water, and steam, as exemplified in the wind-mill, the water-mill, and, above all, the steam engine.

NATURAL

NATURAL HISTORY.

GENUS IV.—THE SHRIKE, OR BUTCHER BIRD.

THIS genus closes the list of rapacious birds, and connects them in the great chain of nature with the order of pies. They are easily distinguished, even at a distance, by their associating together in families, after the young are capable of flight. In this respect they differ remarkably from the predatory birds already described, who generally banish from the nest their young while they are yet incapable of providing for themselves. The female butcher bird provides for her young with the most affectionate care. She at first feeds them with insects, and afterwards accustoms them to small morsels of flesh, which the male supplies with wonderful attention. When the offspring grows up, the parental regards do not cease: the old associate with the young during the whole autumn and winter, without assembling in larger flocks. They make the safety of the family a common interest; they live together in peace, and chase their prey in concert. It is only the powerful call of love that breaks the ties of this family attachment, and separates the young from their parents to rear families of their own.

Though of a small size, and apparently slender in the form of their body and limbs, these birds have a just claim to be ranked among the rapacious tribes, and even among the most bold and sanguinary of that order. Their bills are large, strong, and hooked at the end; their appetite for flesh is decidedly ascertained, and they are, perhaps, the most fierce of all birds. One is astonished to witness the intrepidity with which a small butcher bird maintains the conflict against the pies, crows, hawks, and other animals far beyond it in size: not only does he engage in self-defence, but often also attacks, and almost always with success, especially when the pair unite in driving these hostile tribes from their young. He waits not till they approach; it suffices that they pass within his view; for as often as they do he intercepts them, and falls upon them with loud cries; cruelly wounds, and beats them off with such fury, that they seldom venture to return. In this unequal combat it is seldom he yields

yields to superior strength, or allows himself to be carried off: his own death, and that of his adversary, puts an end to the contest; for they are sometimes, after their battles, seen to fall together upon the same field.

Nothing in nature displays the power and the rights of courage more strikingly than this small animal. The most formidable birds of prey, even those four times his size, respect him. The kite, the buzzard, and the raven, rather seem to dread than seek an engagement with him. Although he is hardly larger than a lark, yet he singly wages war with the hawks and falcons, and hunts within their territories without fearing their resentment. The butcher bird kills partridges, young hares, and small birds, which it seizes by the throat and strangles. It is said that when it has thus killed its prey, it fixes it upon the point of a thorn, and tears it, when thus spitted, to pieces. It is supposed that as nature has not given this bird strength sufficient to tear its prey with its feet, as the hawks do, it makes use of this extraordinary expedient.

Some of the butcher birds migrate; those which remain in the country all the year inhabit the woods and high mountains. The larger kinds build upon tall trees, in the fork of a branch; the smaller in the hedges and thickets. They lay from six to eight eggs, about the size of those of the thrush. The nest, upon the outside, is composed of white moss, interwoven with blades of grass; the inside is thickly lined with wool.

THE GREAT ASH-COLOURED BUTCHER BIRD

Weighs three ounces; its length is ten inches; and breadth fourteen. Its bill is black, one inch long, and hooked at the end. The muscles which move the bill are very thick and strong, which makes the head appear large. This apparatus is quite necessary in a bird whose method of killing its prey is so singular, and whose manner of devouring it is not less extraordinary. When confined in a cage it sticks its food against the wires before it devours it, as it does on a thorn in the wild state.

The crown of the head and back of this species are ash-coloured; the quill feathers are black, marked with a bar

of white in the middle. The tail consists of twelve feathers of unequal length; the two longest in the middle are black, those next tipped with white, which gradually increases to the outermost, which is wholly of that colour. The throat, breast, and belly are of a dirty white.

—This species is very common in France, where it remains the whole year, and during summer inhabits the woods and mountains; which, however, it exchanges in the winter season for the plains, and those parts more frequented by man. It builds its nest upon the tallest trees of the forest; an edifice constructed of white moss, interwoven with long piles of grass, and lined within with a thick coat of wool. The female, who is of the same size with the male, and only distinguishable by the brighter tint of her colours, lays from six to eight eggs, about the size of those of the thrush.

Varieties of this species are found in different parts of the world; in Italy there are some with a red spot upon the breast, while those of the Alps are totally white. In Germany and Switzerland there are others of a larger size; in America and Africa there are varieties, whose deviation from the European kind is but extremely slight. The butcher bird of the Cape of Good Hope is the same with that called the *dial bird* by the English at Bengal, and can only be distinguished from ours by the brownish black of the upper part of the body.

THE RED-BACKED BUTCHER BIRD,

Is distinguished from the former by the grey feathers of the head, which are sometimes very bright. The upper part of the back and coverts of the wings are of a bright ferrugineous colour; the breast, belly, and sides are of a beautiful blossom. Nearly resembling this species is the wood chat, described by Pennant and Brisson: it is of the same size, but the colours are a little different. The head and hind part of the neck in the latter are of a bright red or bay colour. Both are equally fierce and mischievous, as the ash-coloured described above. Buffon asserts that both these species are birds of passage; and what confirms his assertion is, a red backed butcher bird sent him by M. Adamson from Senegal.

They

They both nestle in Europe; and their residence and manner of building their nests differ from those of the former species. They build in thick leafy bushes, and not in the forests; at the time when the ash-coloured butcher bird leaves the mountains, they take their departure for the warmer climes of Africa.

THE SMALL BUTCHER BIRD.

Is found in the marshes near London; it is of the same shape as the long-tailed titmouse. The bill is short, strong, and very convex; its colour yellow. On each side of the bill, beneath the eye, is a long triangular tuft of black feathers. The head is of a beautiful grey; the chin and throat are white. It has all the characters of a butcher bird, and is therefore ranked among these by Mr. Pennant and Mr. Edwards. Of the butcher bird there are a great variety of species in different quarters of the world; but a description of their colours and shape, without detailing their history, must prove both tedious and uninteresting.

MORAL AND INSTRUCTIVE BIOGRAPHY.

No. XVIII.

THE LIFE OF THOMAS GARRATT,

THOMAS GARRATT was the son of Mr. Francis Garratt, wholesale tea-dealer near London Bridge, and he died at the age of thirteen, on the 8th of March, 1798, at his father's house at Blackheath, deeply regretted, having, less than a week before his decease, appeared to be in the full vigour and bloom of health.

As youth is powerfully influenced by praise, and is forward to imitate; and as departed merit, whatever stage of life it may have adorned, has, if acknowledged to be remarkable, a claim on posthumous notice; it cannot be judged improper to delineate the character and attainments of Thomas Garratt: but this sketch cannot be materially useful to others, nor can sufficient regard be preserved to the rules of proportion, unless the features of the portrait be mi-

nutely as well as faithfully drawn. Still, however, though the general outline and the prominent lineaments will be clearly traced, it aspires only to the title of an imperfect copy, and will be destitute of many of those delicate touches of which it is susceptible. Though executed by the hand of friendship, it will not be coloured by the pencil of flattery.

The far greater part of his education he received at home, together with two of his brothers, under the vigilant eye of his mother. By the force of his own genius, by the exclusion of temptations to indolence, by habits of early rising, by a frequent interchange of employment, by much personal attendance of tutors, and by a strict adherence to regularity of plan, much was accomplished. To arithmetic, to geometry, and to astronomy, he had paid considerable attention; and the Mathematical Dictionary of Dr. Hutton was one of the books of which he was most fond. In grammar he had arrived at distinguished proficiency; and even in the subordinate but not unimportant subject of punctuation he possessed much minuteness of information. The French tongue he spoke with as much fluency, and nearly as much correctness, as the English. He read and he conversed in the Italian; and he had made great progress in the Greek and Latin languages, and considerable advances in the German; unaided by the use of translations, which cherish idleness, which conceal ignorance, which flatter dulness, and which, as they are commonly employed, at once retard the growth and undermine the permanency of improvement. With the biography, the history, and the geography of antient times, he had an extensive acquaintance; and any disputed point on those subjects, or on chronology, was capable of powerfully interesting his attention, and of inciting him to researches among different authors. Nor was his geographical, historic, and biographical knowledge, as relating to modern ages, though unquestionably less conspicuous, circumscribed within narrow limits. In the elegancies, as well as in the exactness, of English composition he had attained to no small skill; for to this much of his time had been devoted: and if the period of life at which he arrived be considered, he must be pronounced to have possessed fertility of imagination,

imagination, great accuracy of judgment, and great delicacy of taste. Of these qualities of the mind indisputable evidences were afforded by the remarks which he made when he read, as well as by the compositions which he produced. The latter were extremely numerous. Some of them filled a considerable number of pages; and in all of them that were written in the last year of his life, though exuberances, which it was better to cut away, occasionally occurred, different beauties of style were interspersed. They were of various kinds; and sometimes they were distinguished by novelty of illustration, sometimes by cogency of argument, sometimes by a felicity in the choice of words, sometimes by a judicious and skilful arrangement of the contents, and sometimes by a pertinent and copious accumulation of facts. He had, indeed, a quick sensibility to literary excellence. He felt and admired, in the several languages in which they wrote, the wit of Plautus, Boileau, and Fontaine; the perspicuity of diction in Xenophon and Cæsar, Cebes and Arrian; the judgment of Virgil, Metastasio, Addison, and Pope; the elegance of Isocrates and Nepos, of Hawkesworth and Barbould, of Jean Baptiste Rousseau and Harris of Salisbury; the sublimity of Homer and Milton; the beautiful morality in Fenelon and Rollin; the vigour of genius in Tasso and Dryden, in Congreve and Fawcett; the eloquence of Sallust and of Florus; the energy of Johnson; the pathetic tenderness of Racine and of Sterne; the acumen of Hooke and Voltaire in historic reflexions; the descriptive powers of Dyer, Thomson, and Goldsmith, of Shenstone, Sévigné, and Gray; and the masterly delineation of character in Shakespeare, in Schröder, and in Goldoni. But he was not accustomed merely to *feel* the beauties of celebrated productions; and it may reasonably be doubted, whether there is any one of these merits of any one of these writers which has not constituted one of the topics of his *conversation*. To politics, as a science, his attention had not been pointed; but into the great events, successively exhibited on the theatre of Europe, he enquired with that ardour of solicitude which is generally characteristic of the man, long practised in the affairs, and deeply interested in the revolutions of the world. A happy fund

of native humour he frequently displayed. On any subject with which he was acquainted he could speak extempore with readiness, with energy, with vivacity of conception, and with no small degree of propriety. Of his growing excellency as a speaker, as this is a habit susceptible of perpetual improvements, it would, indeed, have been difficult to have formed too elevated expectations. In a kindred accomplishment, to which he had much longer attended, little remained for him to learn. When he recited from memory, to a small circle of relations or friends, any composition in prose or poetry, his delivery was highly interesting and impressive, and commanded approbation: for he possessed a memory accurate and retentive; a promptitude and perspicuity of discernment; action varied, graceful, and appropriate; features uncommonly beautiful, and capable of being instantaneously lighted up; and a voice powerful, yet surprising in sweetness, of singular flexibility, and skilfully modulated; and it was difficult to decide whether he excelled in softness or in strength, in repeating the calm productions of didactic composition, or those of eloquence or wit. Such were the principal acquisitions of Thomas Garratt. When snatched by death from his friends he was not thirteen years and a half old. Attached to literature as he was, he confined not himself within its limits. Into the causes of things he was eager to penetrate. External nature had, in his eyes, numerous charms; and its diversified appearances and products appeared to him to demand investigation. That he would hereafter have viewed human nature also with a penetrating glance, and have nicely discriminated the varying proportions of light and shade in different characters, his observations clearly evinced.

That he was eminent for industry will perhaps be concluded. But though this be an encomium to which he had not any peculiar claim, his industry, within the last eighteen months of his life, was considerably increased; and he was still more estimable for the qualities of the heart than for those of the understanding. His general behaviour (and this is a happy medium rarely attended to in the dawn of life) was equally remote from the bashfulness which disconcerts, and from the confidence which elates. Though highly

highly accomplished, he was destitute of pride; though ambitious of praise, he was perfectly free from envy and jealousy; whilst sprightly in his conversation, and gay in his disposition, his character was exalted by piety, and he had a strong conviction of the importance of virtue. Generosity and disinterestedness predominated in his conduct, and gratitude in his breast was a principle of vigorous operation. Forgiveness, in case of any injury or affront, whether supposed or real, appeared to be in him a virtue, for the practice of which no effort was requisite. He was graceful and attractive in his manners; his flow of spirits was scarcely ever subject either to languor or to intermission; and he seemed formed to enjoy and to communicate pleasure. Cold indifference to the interests of others was a stranger to his bosom; the quickness of his tread, the illumination of his face, and the expression of his fine eyes, often announced to his relations and his friends his warmth of attachment and eagerness to oblige; and small, indeed, is the number of those whom disease has cut down so early in the spring of life, who will be remembered with equal tenderness by an equally large proportion of their acquaintance. But his excellencies did not generate supineness. Moral improvement was with him an object of serious and not unfrequent meditation; and he had, in fact, within the last two years, made perceptible progress in the cultivation of several virtues.

The nature also of his *amusements*, or the manner in which he entered into them, indicated the bright or the amiable qualities of his mind; and, when viewed in connection with his solid acquisitions, justified the conclusion, that he exhibited the probable presages, and inherited the genuine stamina of future greatness. Among the methods of relaxation, which his own inclination suggested, were miscellaneous reading and rational conversation: in the former his choice of books; in the latter the questions he proposed, the anecdotes he related, the arguments he urged, evinced his unusual ripeness of intellect and versatility of talents. Possessed of a well-disciplined eye, and a steady hand, he was singularly dexterous in the use of a refracting telescope; and being acquainted with the situation of a number of the constellations and of many single stars, he pointed to them with

with an admirable degree of celerity. Having melted pieces of glass he endeavoured to polish them, that they might serve as lenses; and he formed an hygrometer. The pen, the pencil, the chess-board, and the tools of the carpenter, were by him regarded equally as the instruments of amusement; and the atlas and the globe, the barometer and the thermometer, each, in its turn, supplied him with entertainment. In the drawings which he executed, sometimes in a finished style, and sometimes with more than ordinary rapidity, taste and genius were discoverable, nor did he tread in only one or two walks of the art. In the difficult game of chess, though opposed by various competitors, and by some of long experience and tried skill, he was rarely conquered; and his hand-writing, in ease, in decision of character, in exquisite beauty, was surpassed by very few men of the most acknowledged eminence in penmanship. But his sedentary or domestic amusements, no more than his studies, were permitted to impair the stoutness of his limbs, the clearness of his complexion, or the crimson colour of his cheeks. Of gardening he was peculiarly fond. Careless of fatigue, and patient of heat and cold, he spent much time in the open air, discovering, in its recreations, an uncommon share of animation and activity, of courage and a spirit of enterprize; and, when he was merely walking, his taste was particularly displayed in his remarks on the picturesque objects and the glowing tints of the distant landscape; and his vigilant curiosity was particularly excited by the diversities of the insect tribe, and by the varied productions of the vegetable world.

MANNERS AND CUSTOMS OF NATIONS.

DESCRIPTION OF THE CHARACTER, MANNERS, AND CUSTOMS OF THE INHABITANTS OF CHINA.

(Continued from page 265.)

Of Chinese Slight of Hand, &c.

A GREAT number of the Tao-seé (whom we shall describe in the next number) pretend to be fortune-tellers. Although they have never seen the person that consults

sults them, they address him by his name, give a particular account of his whole family, describe the situation of his house, tell him the names of his children, and many other particulars, which they have address enough to learn by some means before hand. Some of these diviners cause the figure of the chief of their sect to appear in the air; others command their pencil to write by itself, which traces out on paper or sand an answer to questions asked, or to advice requested. Sometimes they make every person in the house appear in succession on the surface of a basin filled with water, and shew, as in a magic picture, all the revolutions that are to happen in the empire.

One of these people suspended on a hook an iron chain of round links about four feet long, and then took a mouse out of a box, and made it dance on the table, after which the little animal, at his order, went in at one link of the chain, and out at another, till it ascended to the top; whence it came down again, the contrary way, without missing a single ring. Monkeys are also made by these jugglers to perform many surprising tricks.

Mr. Anderson informs us that their skill in the art of balancing excelled every thing he had seen or could have conceived. By an imperceptible motion, as it appeared, of the joints of their arms and legs, the Chinese can give to basins, jugs, glasses, &c. an apparent loco-motion, and produce a progressive equilibrium, by which these vessels change their positions from one part to another of the bodies of the balancers. He gives the following instance of slight of hand which he saw.

The performer began by exhibiting a large basin in every possible position, when he suddenly placed it on the stage with the hollow part downwards, and instantly taking it up again discovered a large rabbit, which escaped from the performer, who attempted to catch it. This trick is mentioned by Mr. A. as very surprising, on account of the size of the animal, the short space of time in which it was performed, and because the whole floor was covered with matting, through which the rabbit could not escape, though it was not to be found by the spectators.

The Chinese are also addicted to the practice of calculating

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ing people's destiny. Those who act this part are generally blind; they go about from house to house playing on a lute, and offering their assistance for a small piece of money. Others pretend to have the power of consulting oracles, who are applied to by many people before they undertake a journey, to buy or sell, to commence a law suit, or to enter on the marriage state. The method used on these occasions is, first to burn perfumes before an idol; upon the altar which supports this idol there is a horn filled with small flat sticks, upon which are traced a variety of unintelligible characters. Each of these small sticks conceals an answer. After many prostrations, the person, who consults, lets fall, at random, one of these small sticks, which is explained by the person accompanying him.

It would be almost an endless task to point out all the superstitious notions of this people. By some they pretend to know the directions most proper for houses to stand in; by others the quarter to which doors ought to front, and the plan and day proper for constructing the stoves in which they cook their rice. But the object on which they bestow their greatest care, is the choice of the ground and situations most proper for a burying-place. Some people follow no other profession than that of pointing out mountains and other places, which have an aspect favourable for works of that kind. When a Chinese is persuaded of the truth of such information, there is no sum of money which he would not sacrifice to obtain possession of the fortunate spot.

Of Chinese funeral Rites.

All people of fashion in China cause their coffins to be provided, and their tombs to be built during their life-time; and each family has a particular burying-place. The burying-places of the common people are without the city, none being allowed within the walls. The rich frequently spend a thousand crowns to have a coffin of precious wood, carved and ornamented with different colours.

When a man of fortune dies his nearest relation informs all his friends of it; they assemble, wash, and perfume the corpse, and dress it in the best clothes he used to wear. Then placing the dead body, thus dressed, in a chair, the wives, children,

children, and relations prostrate themselves before it, passionately bewailing their loss. The third day the body is put into a coffin, covered with a piece of silk, and placed in a large room hung with white, an altar being erected in the middle of it, with a picture or statue of the deceased. The relations are again introduced with wax lights and incense. The sons of the deceased, clothed in linen, and girt about the middle with a cord, stand on one side of the coffin in a mournful posture, while the mothers and daughters stand on the other side, behind a curtain, lamenting their loss; and the priests are the whole time singing mournful songs.

Those who enter the room salute the coffin in the same manner as if the person it contains were still alive. When they have paid their respects they are conducted into another apartment, in which they have tea and dried sweet-meats.

Those who live in the neighbourhood go to pay their respects to the deceased, but those who are indisposed, or live at too great a distance, send a note of excuse. These visits are afterwards returned by the eldest son of the deceased; but complimentary billets are generally substituted for real visits. The custom is not to be at home when he calls.

The relations and friends of the deceased are informed of the day fixed for performing the funeral rites, and few of them fail of attending. The procession commences by a troop of men carrying different figures made of pasteboard, representing slaves, lions, tygers, horses, elephants, &c. Other troops follow, carrying standards, censers filled with perfumes, while others play melancholy airs on different musical instruments. These musicians precede the coffin, which is covered with a canopy, in form of a dome, and composed of violet coloured silk. The coffin is placed upon the bottom of this machine, and is carried by sixty-four men. The eldest son, clothed in a canvas frock, with his body bent, and leaning on a staff, follows near the coffin, and behind him his brothers and nephews. Next come the relations and friends, clad in mourning, followed by the female slaves of the deceased, who exhibit particular marks of sorrow, and make the air resound with their cries.

When they arrive at the burying-place the coffin is deposited in a tomb appropriated for it, not far from which there
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are tables ranged in different halls, prepared for the purpose of giving a repast to the assistants, which is served up with the greatest splendour.

During the time of keeping the corpse there are tables well furnished every morning, and the priest is butler at night. A sheet of paper is hung over the gate, expressing the name and quality, and giving a short detail of the life and great actions of the deceased.

If the deceased was a grandee of the empire, a certain number of his relations never leave the tomb for one or two months. There they reside, in apartments which have been previously prepared for them, and they renew the marks of their grief and sorrow every day. The magnificence of these funeral ceremonies is augmented in proportion to the dignity and riches of the deceased. In the procession which attended the corpse of the eldest brother of the emperor *Khang-hi*, there were more than sixteen thousand persons, all of whom had particular offices assigned to them.

The form of the Chinese tombs is various, but the most common is that of a vault, in which the coffin is shut up; over the vault is raised a pyramid of earth, about twelve feet in height, and ten feet in diameter, and around it pines and cypresses are usually planted. A large table of white marble, well polished, is placed before it, upon the center of which are candlesticks, vases, and a censer of exquisite workmanship.

Mourning continues in China three years, during which they abstain from the use of flesh and wine; they can assist at no entertainment of ceremony, nor frequent any public assembly.

Of Chinese penal Laws and Methods of Punishment.

The Chinese laws are so combined that no fault escapes punishment, and the chastisement never exceeds the delinquency. Their mode of procedure in criminal cases is, perhaps, the most perfect of all others. Every person accused is examined by five or six tribunals, with the greatest care and attention, which extend also to the character of the accuser and witnesses. During this process the accused remain in prisons, but Chinese prisons are not like many European

ropean dungeons: they are spacious, and fitted up with a certain degree of convenience.

The difference of Chinese punishments is regulated by the different degrees of delinquency. The slightest is the *bastinado*, which is only used for chastising those who have been guilty of very trivial faults; and the number of blows is estimated according to the nature of the offence. The lowest number is twenty, when the punishment is considered as a paternal correction. The emperor even orders it to be inflicted upon some of his courtiers, which, however, does not prevent them from being afterwards received into favour.

The baton, or *pan-tsee*, made use of, is a piece of bamboo, flat and broad at the bottom. Every mandarin may use it, either when any one forgets to salute him, or when he administers public justice. On such occasions he sits at a table, upon which is placed a bag filled with small sticks, while a number of petty officers stand round him, each furnished with some *pan-tsees*, and waiting only for his signal to make use of them. The mandarin takes from the bag one of those little sticks, and throws it into the hall of audience. The culprit is then seized, and receives five smart blows of the *pan-tsee*; if the mandarin draws another stick from the bag, a second officer bestows five more blows, and the punishment is thus continued until the judge is pleased to make no more signals; when the criminal must prostrate himself before him, and thank him for the care which he takes of his education.

The punishment of the *wooden collar* is also used in China. It is composed of two pieces of wood, hollowed out in the middle, which, when put together, leave room for the neck. They are laid upon the shoulders of the criminal, and joined closely together, in such a manner, that he can neither see his feet, nor put his hands to his mouth, and consequently can eat only by the assistance of another. The weight of the collar, which is from forty to two hundred pounds, is regulated according to the degree and nature of the crime; and the duration of the punishment for robbery, breaking the peace, or gaming, is generally three months, at the expiration of which the offender is brought before the mandarin

darin, who exhorts him to amendment, and discharges him after he has received twenty blows.

Other crimes are punished either with banishment, or by being condemned to drag the royal barks for a term of years, or to have their cheeks branded with a hot iron. Children who are deficient in duty to their parents are condemned to receive a hundred blows of the *pan-tsee*. If they give them abusive language they are strangled; if they lift up their hand against them they are put to death.

Beheading is considered as the most disgraceful of all punishments, because they look upon the head as the noblest part of man; and if a person lose it when he expires, his body is not preserved in that entire state in which it was when he received it from his parents. This reflection accords with the respect and reverence which they pay to their parents.

(To be concluded in the next number.)

THE ANTIENT AND MODERN HISTORY OF NATIONS.

OF THE GRECIAN STATES.

(Concluded from page 272.)

WE have already seen in what manner Athens came under the dominion of Sparta, which was the next most renowned state of Greece, and was even prior to it in the date of its institution.

Sparta or Lacedæmon, as we have seen, was first governed by kings; it afterwards admitted, instead of one king, two to reign with equal authority; a mode of government which lasted several centuries, though the one was almost continually at variance with his associate on the throne. During this succession an attempt was made to impose a tribute upon the peasants, to which all acceded except the *He-lotes*, who excited an insurrection, for the purpose of vindicating their rights; they were, however, subdued, and, with their posterity, condemned to perpetual slavery, and a

decree

decree was passed that all other slaves should go by the general name of Helotes.

There is nothing more remarkable in history, yet nothing better attested, than what relates to the laws and government instituted by Lycurgus in Lacedæmonia. In forming the constitution Lycurgus had as much respect to the business of war as he had to internal and political institutions. With this view he proscribed all kinds of luxury, all the arts of elegance, and, in short, every thing that tended to soften and debilitate the human mind. The Spartans were forbidden the use of money, they lived at public tables, and on the coarsest fare: the young people were taught to pay the utmost reverence to those who were more advanced in years; and all ranks, capable of bearing arms, were daily accustomed to the most painful exercises, so that, to the Spartans, the time of war was the period of relaxation. At that time many indulgencies were allowed them, by which the camp might be regarded as a scene of ease and luxury.

He forbade the Spartans to surround their city with a wall, lest security should lead them to remit their vigilance in its defence: he enjoined them not to pursue a flying foe after battle: he made it shameful for them to turn their backs upon an enemy, however superior in force; so that, in battle, death or victory was the lot of every Lacedæmonian; or a fate worse than death, disgrace! an infamy that excluded them from all civil and military employments.

The minds of the Spartan youth were improved by a constant habit of reasoning in short pithy sentences, for which they were very celebrated. Thus, in modern times, a *laconic** sentence, is one that is short but expressive.

Marriage, as at Athens, was esteemed honourable also in Sparta. After a certain age unmarried people were scarcely to be met with. A young man refused to rise up at the approach of an illustrious general, because he had never been married: "You have no children," said he, "who may shew me the same respect, and rise up at my approach."

Besides the two kings, whom Lycurgus continued at the

* From *Laconia*, the general name for the Lacedæmonian province.

head of the government, he instituted a *senate*, composed of twenty eight members, whose policy chiefly consisted in siding with the kings, when the people were grasping at too much power; and, on the other hand, in espousing the interests of the people, whenever the kings attempted to carry their authority beyond the bounds assigned to the office. The senators were persons chosen on account of their great virtue; but none, however excellent in other respects, were eligible till sixty years of age. These formed the supreme court of judicature; and though there lay an appeal from them to the people, yet for several ages, such was their caution, and such the integrity of this tribunal, that none seemed desirous of seeking farther justice, and both parties acquiesced in the equity of their decrees. The great power of which the senate was possessed, was, about a century after, tempered by the formation of a superior court, called the court of the Ephori, which consisted of but five in number, and the members were chosen annually into their office. They were elected from the people, and possessed the power of arresting and imprisoning even the persons of their kings, if they acted unbecoming their station.

The people also had a nominal share in the government. They had their assemblies, consisting of citizens only; and also their great convention of all persons who were free of the state; these were called upon to approve or reject the decrees of the senate, but without the liberty of debating any subject. They were not permitted to hold any of the offices of the state, and were considered merely as machines, which their wiser fellow citizens were to conduct and employ.

To reconcile the people to the small degree of power granted to them, Lycurgus boldly resolved to give them a share in those lands of which, by dissipation and other causes, they had been deprived. To keep the people in plenty, but in a state of entire dependance, appears to have been one of the most refined strokes in his system of legislation. He accordingly divided all the lands of Laconia into thirty thousand parts, and those of Sparta into nine thousand, which he portioned out to the respective inhabitants of each district. Each portion was sufficient to maintain a family with frugality; and though the kings had a larger share

share assigned to them to support their dignity, yet their tables had rather the air of competency than of superfluity and profusion. With so much judgment did Lyscurgus carry this plan into effect, that, at the end of several years, he was able to appeal to his fellow citizens, "whether Lacedæmonia had not the appearance of an estate, which several brothers had been dividing among themselves."

This measure, however, at first, created a violent opposition, and the legislator narrowly escaped with his life. In his attempt to take refuge in a temple he was pursued by Alcander, a young nobleman, who, on Lyscurgus's looking back, beat out one of his eyes; the legislator immediately stooped, and, shewing his face covered with blood, the people were at once so struck with their own ingratitude and his danger, that, with one consent, they asked his pardon, and delivered up the offender to his revenge. Instead, however, of punishing or upbraiding him harshly, he caused him to wait upon his person: this instance of forbearance greatly conciliated the people's esteem and affection.

After Lyscurgus had established every thing agreeably to his wishes, his next care was how to secure a perpetual observance of the laws which had been instituted. For this purpose he pretended a necessity of going to Delphos, and required an oath from the senate and people to adhere to his regulations until he returned. Upon this he imposed upon himself a voluntary banishment, in which he died.

The Spartans were long distinguished for a strict and rigid observance of the laws, which was not so much a compliance with the orders of individuals, as a respect for established customs, and a regard for their country. Private affections and interests gave way to, and were absorbed in, a desire of promoting the public good.

The genius of the Spartans was perfectly martial. Their extraordinary valour gained them a name among surrounding nations. They were distinguished from the other Greeks at the Olympic games. Neighbouring people applied for generals to this nursery of heroes. They held the balance between contending states, and were at the head of the Grecian affairs for five hundred years, and for a great part of that time were deemed invincible. But notwithstanding the

great valour of the Spartan state, it was formed rather for a defensive than an offensive war; and if they had adhered to the defensive system, their power would have been still of longer duration; but prosperity led them to attempt the reduction of all Greece, and to attack the king of Persia. Thus they armed all Greece against themselves, and being broken and dispirited by several defeats, and particularly in the battle of Leuctra, they were at last scarcely able to defend their own city.

Thus have we briefly sketched the rise, progress, and dissolution of Athens and Sparta, the two states that, in a great measure, engrossed all the power of Greece to themselves; and though several petty states still held their governments in independence, yet they owed their safety to the mutual jealousy of these powerful rivals, and always found shelter from the one against the oppressions of the other.

After these two commonwealths THEBES lifted up its head, principally renowned for the valour and prudence of Epaminondas, who, with the assistance of Pelopidas, humbled the pride, and reduced the consequence of Sparta, and took the lead in Greece. But upon the death of Epaminondas, the Thebans, being without a rival, and elated with prosperity, gave themselves over to idleness and luxury: they slighted the virtue of their ancestors, and derided their frugality: the public revenues, which used to be employed to pay fleets and armies, were now expended upon games, shows, and frivolous amusements.

This degeneracy of disposition and manners in the Thebans and other Grecian states, afforded Philip, who had been educated under the discipline, and excited by the valour and wisdom of Epaminondas and Pelopidas, an opportunity of raising the Macedonians from obscurity to the empire of all Greece and Asia.

So small was the power of the Macedonians in the beginning of Philip's reign, that they were able with difficulty to bear up against any of the neighbouring nations. But this brave and prudent monarch subjugated, in a very short space of time, the barbarous surrounding states, by assisting the weak against the strong; and then, by the same arts, he commenced hostilities against Greece, till, worn out
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with mutual contentions, he subdued it entirely. Greece, therefore, conquered and at peace, Philip was declared general of the Grecian armies against the Persians; but while he was preparing for this expedition he was assassinated by his own subjects, leaving the glory of executing this business to his son Alexander.*

The fruits of this expedition perished with the conqueror, who dying in the thirty-second year of his age, and without heirs, the Macedonian chiefs entered into cruel wars with each other, during which those nations that were to the east of the Euphrates fell under the dominion of the Parthians.†

As Alexander did not name his successor, there started up as many kings as there were commanders. At first they governed the provinces that were divided among them, under the title of viceroys; but when the family of Alexander was extinct, they took upon themselves the name of kings. Thus the whole empire of Alexander produced four distinct kingdoms, viz. (1.) the Macedonian, (2.) the Asiatic, (3.) the Syrian, and (4.) the Egyptian; which flourished under their own respective monarchs, till at last they were all compelled to receive the Roman yoke.

The principal persons who reigned at Macedonia, after the death of Alexander, were, Antipater;—Philip, a brave man, who long contested the Roman arms, but was at length subdued, and obliged to conclude an ignominious peace;—and Perseus, who, renewing the war against the Romans, was overcome and taken by Æmilius, and carried

* The reader is referred to page 212 of the present vol. of the Preceptor for a brief account of the expedition undertaken against Persia by Alexander.

† The kingdom of Parthia, which was founded by Arbaces, about three hundred years before Christ, and which, after the death of Alexander, extended itself over Persia, was subdued by Trajan, and afterwards relinquished by Adrian, who, in the beginning of the second century, made the Euphrates the eastern boundary of the empire. The revolt of the Persians, and the subjection of the Parthians to their dominion by Artaxerxes, formed the second Persian empire, which continued from the year of Christ 226 to the year 652, when the whole country was overrun by the Arabs.

in triumph to Rome, where he died in prison. Thus the Macedonian kingdom was reduced to a Roman province.

From the Asiatic kingdom, which comprehended *Natolia*, and other regions beyond Mount Taurus, proceeded these three smaller kingdoms, 1. Pergamus, the last king of which, Attalus, appointed the Roman people to be his heir. 2. Pontus, reduced by the Romans into the form of a province, after they had subdued Mithridates, the last king. 3. Armenia, of which Tigranes was the last monarch.

The most celebrated monarchs of the Syrian kingdom, were Antiochus the Great, who having conquered a considerable part of the east, made war upon the Romans, by whom he was defeated, and banished beyond Mount Taurus; Antiochus Epiphanes, a cruel enemy of the Jewish nation; and Tigranes, who governed at the same time Syria and Armenia, and under whom they both became subject to the Roman power.*

During this period the more celebrated sects of philosophers prevailed in Greece, such as the Academics, Peripatetics, Stoics, Epicuræans, Sceptics, and Cynics, of which the authors or founders were, Plato, Aristotle, Zeno, Epicurus, Pyrrho, and Antisthenes.

The celebrated Alexandrian library was founded by Ptolemy Philadelphus. When the city of Alexandria was building, the use of *papyrus* was discovered, a plant which grows on the banks of the river Nile, and being found fit for writing, it came into common use. Hence is the origin of the word *paper*. In process of time the Egyptian princes prohibited the exportation of the papyrus, when another substance was used in its stead, which was called *pergamena*, from *Pergamus*, the place where it was first used, whence we have the word *parchment*.†

PRACTICAL

* For an account of the Egyptian kingdom formed by the Greeks, we must refer to vol. II. of the Preceptor, p. 304, 5.

† *Belpouz*, *Semoisy*, *Sardanpab*, *Xerxoku*, *Dartib*.

Athalus, *Codazpu*, *Drachid*, *Soluse*, *Pelopfyl*.

Lycurzyk, *Leuctraisi*, *Epam laut*, *Alexidi*.

These memorial lines, together with those in page 100, vol. I. of the Preceptor, will be found to contain the most remarkable facts

connected

PRACTICAL INSTRUCTIONS

*On Taste, Literature, and the Art of Composition.*CONTINUED IN A SERIES OF LETTERS FROM A FATHER TO
HIS SON.

LETTER XVII.

My dear George,

HAVING finished, in my last letter, the consideration of eloquence, as addressed to popular assemblies and the bar, I now proceed to consider that which is adapted to the PULPIT.

Here the highest kind of eloquence may be, and indeed ought to be, employed. The pulpit orator has several advantages over those who speak in popular assemblies and at the bar. He always speaks on subjects of dignity, and of

connected with the antient sacred history, and the histories of the Assyrian, Persian, and Grecian monarchies.

BELUS, who stands at the head of the Assyrian monarchy, founded his empire in the year B. C. 790. Semiramis seized the government 760 B. C.; and an end was put to the monarchy by the Persians at the death of SARDANAPULUS, 711 B. C.

In the Persian monarchy founded by Cyrus, 536 years B. C. we shall notice XERXES, who flourished 485 years B. C. and the death of DARIUS CODOMANUS, with whom the empire ended, B. C.

337. The most memorable facts during the third or Grecian monarchy, are the founding of ATHENS into a kingdom, B. C. 1556; the death of CODRUS, and the establishment of the archonship, 1075. The formation of DRACO's code of laws, 572. The institutions of SOLON, 562; and the destruction of the Athenian power by the PELOPONESIAN war, 405 years B. C.

LYCURGUS flourished at Sparta in the 708th year B. C.; and by the battle of LEUCTRA, 373 B. C. that state fell under the power of the Thebans. At the battle of Mantinea, 363 B. C. EPAMINONDAS was slain, and the glory of the Theban state passed to Macedonia. Upon the death of ALEXANDER the Great, 323 B. C. his vast empire became divided into provinces, and from them four distinct kingdoms were formed, all of which were swallowed up by the Roman empire, about four core years before the christian era.

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the highest importance; they concern all mankind; he speaks to a large assembly; he meets with no interruption; and never needs to speak without premeditation. A preacher also, I must add, labours under some disadvantages. All the doctrines of christianity have frequently been discussed, and he is under the necessity of choosing a beaten subject; it will, therefore, be very difficult to fix the attention of his hearers, or place his subject in a new light; for it is not so much the business of a preacher to teach his hearers any thing new, as to persuade them to practise those duties they already know. Hence though we have many preachers, we have scarcely any that may be called singularly eminent. There is no art I know of in which we are farther from perfection than in this. We have no orator who may be compared with Cicero and Demosthenes.

The object of preaching is, indeed, truly noble, and deserves the highest attention, but few have arrived at distinction in it; for nothing can be more truly disgusting than the flimsy theatrical declamation of those who are called popular preachers, in the metropolis especially.

Some may object that eloquence belongs only to things human, and can have no place in those that are divine, and which ought to recommend themselves by their own weight and importance. If, indeed, eloquence consisted, as some imagine, in false glare and brilliancy, and in making every thing put on the appearance of truth, this objection would not be without foundation, but true eloquence, as I have said, consists in placing truth in the clearest light, and persuading men to practise what their duty exacts.

Eloquence could not be necessary in any place more than the pulpit; and in proof of this I might produce many examples from the prophets and apostles, who used all the arts of eloquence to warm and interest the hearts of their hearers. The principal rule, then, is, that the preacher ought to have a fixed and habitual view of the end of preaching, for without this he can never use the means.

The chief design of preaching is to make men good; and in order to this he must convince them of their duty. All his instructions ought to be practical; he should never speak upon metaphysical subjects, but on such as have a tendency

tendency to make men better. All preachers, then, should study to be popular in the proper sense of the word; and though they ought not to suit their manner to the vain humours and prejudices of an audience, yet they should endeavour to make an impression. The christian preacher ought not to treat his subject in an abstract way, as such discourses will have but little influence on the generality of his audience; a persuasive speaker will commonly do more good than a strong reasoner; he must also be a good man, for without this all his other qualifications will have little effect; the heart must be spoken to by the heart; he must not only believe the doctrines of christianity, but must shew his faith in his practice.

The characteristics of pulpit eloquence, as laid down by Dr. Blair, are gravity and warmth. The seriousness of the subject requires gravity, and its importance warmth. Too much gravity without warmth is in danger of making the preacher dull, and too much warmth without gravity will make him appear light and theatrical; they should be united to make a full impression.

With respect to the choice of the subject, the best rule is to choose such as are most useful. There are, it is true, some particular doctrines, which may be frequently insisted upon; but variety must be studied, not only that you may diffuse instruction more extensively, but that you may not tire your hearers.

With respect to the arrangement and composition of a sermon, the same rules with respect to the constituent parts will apply as to every other oratorical composition. But there are some rules which particularly regard the eloquence of the pulpit.

Rule 1st. In composing sermons you must attend to unity; it is of the utmost consequence that there should be one point to which the rest refer, for the mind cannot attend to more than one important point at once. The introducing, therefore, of a number of objects into the same discourse must be attended with great confusion. By unity I do not mean to say that you should only make use of one argument, or admit only one thought to be exhibited in different lights. On the contrary, it admits of much variety of

of under parts and appendages; but these must be sub-
servient to the main design. Thus, I may recommend the
love of God by many different arguments, and also shew
why these arguments have so little effect; but if I proceed
to shew that a man must also love his neighbour, I break
the unity of the discourse. A good preacher, therefore,
ought not to choose general texts, which may be applied to
different subjects; for the more precise a sermon is, the
more useful will it be. General texts are commonly chosen
by young preachers, because they imagine they will be
more easy: but as they are less useful, it will be better when
you take general texts to choose some single topic to dis-
course upon; and though the execution of it may be more
fatiguing, yet its proper management will have more merit.

Rule 2d. Never try to say all that can be said upon any
subject, but select the most striking parts, which will have a
greater effect upon your audience than a tedious detail,
which will weaken its force. Place yourself in the state of
a hearer, and consider what arguments would strike you
most; make use of these, and you will seldom fail to interest
others. But it will be said, by this means we shall be able
to make but few sermons upon one text. Many, indeed,
imagine that a preacher never enters fully into his subject
unless he preaches several sermons from one text, but this is
a mistake; those do not always enter deepest into their sub-
ject who preach longest on it, and I see no disadvantage
from changing the text. One or a few sermons seem to be
sufficient on any one subject.

Rule 3d. Study to render every thing clear and interest-
ing to your hearers. A dry sermon can never be a good
one. You must also have in your view the different char-
acters of men in the different states of human life. The
striking accuracy of moral characters, faithfully delineated,
will make a stronger impression than any precepts. We
find many examples of human character in scripture. To
these it is proper frequently to refer; and the management
of them in a proper manner may certainly be very useful.
As this method is little used, it will also be attended with
all the advantages of novelty, and fix the attention of the
hearers.

Rule 3d. Never take any particular preacher that may be in vogue for your model: Nothing is more fallacious than the popular taste as to preachers, and I have seldom known a very good one approved. Your only model should be human nature; your only object the desire of being useful. Truth and goodness are firm, and will establish themselves, but humour and caprice are fleeting and uncertain. By servile imitation of others too you damp your own genius, check its progress, and effectually hinder it from arriving at any thing great or noble.

Rule 4th. Your style should be plain and perspicuous; not low and flat, nor swelling with bombastic phraseology, or such as is remote from common use. This is too frequently the practice of young preachers, but it is a fault, and ought to be corrected. Dignity consists in propriety, not in fine glaring words; but I have already treated sufficiently of style, and all that is necessary to add on this occasion is, that a preacher should be always intelligible.

The style of the French preachers I do not, in general, admire; they are, it is true, animated, while the English are rational and full of argument; but both these should be united to form a perfect preacher. The French have but few thoughts, and these placed in a variety of lights, which renders them sometimes feeble, but they are, perhaps, more warm and persuasive. There are some protestant preachers of the French, and particularly Soufin, who may be read with advantage. Amongst their popish divines Bourdeloue is the most admired in France, but I think him dull and verbose. Flechier is more ornamental; but the best of them all is Massillon, bishop of Clermont, who is really an elegant and nervous writer, and one who well understood the human heart.

In England, before the Restoration, the preachers were very full of scholastic and casuistical theology, and abounded in divisions. After the Restoration they became more correct and rational; but the puritans still retained something of the old style, but united with a considerable share of warmth and enthusiasm. The opposition between them made those of the establishment run into the other extreme; and they became mere moral and insipid preachers.

Among our English divines Doctor Clarke is convincing and rational; and there is a vein of good sense runs through the works of Archbishop Tillotson, which has caused him to be universally admired. Barrow is remarkable for his fecundity of invention; his genius is inexhaustible, but he accumulates sentiment with little regard to arrangement, and without energy or passion. Bishop Atterbury deserves to be singled out from the croud, as he writes in a more elegant strain than most of his contemporaries, and approaches nearer to perfection, perhaps, than any English writer of sermons. Had Bishop Butler written more discourses like those on self-conceit, and that on the character of Balaam, he would have been an excellent model.

Of modern writers Dr. Blair has had great popularity; but his sermons seem composed from a common-place book. He accumulates sentiment like Dr. Barrow, and though very artificial in his style is often tedious. Whoever wishes to peruse perfect models of practical christian eloquence will look into the sermons of the present bishop of London; and when we consider that these are delivered with all the energy becoming a christian preacher, and with every modest grace of elocution, it is certainly no unfavourable prognostic of the taste of the present times, that his lectures, which he preaches during Lent, should be more crowded than any place of public entertainment in the metropolis.

Rule 5th. Beware of all false brilliancy, which is unbecoming the gravity of those holy subjects which are proper for the pulpit; too many epithets cloy and enfeeble the style: so "the vain and transitory things of this life" would be better expressed "the transitory things of this life." Guard against favourite expressions; none of that kind should appear above once in a discourse, otherwise they will appear ridiculous, and excite an idea of barrenness. Some, in composing sermons, are for reading all the authors they can find who treat upon their subjects. Others, I fear the greater part, content themselves with copying (I might say literally) some favourite author, at least with following him as their model; but by reading many you will be perplexed; and by confining yourself to one, and following him,

him, you will sometimes be led into the very worst method, that of intermixing his method with your own.

I am therefore of opinion that the best way is to consider seriously your subject within yourself; consider its nature; and lay down the most proper plan you can think of, and it will probably remain with you. After, however, you have laid down your plan, then, and not till then, consider what others have said on the subject; when you have read them over, you may use such of their sentiments as you approve, but never copy the words: this is to make use of fair assistance, all beyond is plagiarism.

Before I conclude, I repeat again, that you should attend to the sentiments rather than the words; your chief design should be to better the hearts and reform the lives of men. The best panegyric that ever was bestowed on any preacher, was the compliment of Louis the Fourteenth to the bishop Clermont, whom I have already mentioned. After preaching in the royal chapel Louis said to him, "Father, I have heard many discourses in this chapel, with which I have been much pleased; but I never hear you preach but I am displeased with myself, and disapprove of my own conduct."

VISITS TO THE BOTANICAL GARDEN.

FIFTH DAY.

(Continued from vol. III. page 42.)

WE now passed over the ground where those plants are sown which they want to naturalize. We saw in the midst of it a tree which attracted the attention of Gustavus. "What is this tree?" said he; "and why is it put there? Is it worth the trouble?" Certainly," answered I, "since it is the Chinese mulberry, otherwise called the paper mulberry." "Why is it called the paper mulberry?" "Because the Chinese make their paper of it; and the inhabitants of Otaheite make a kind of cloth of its bark, which is also like paper, and of which there are several specimens in the Cabinet of Natural History." "Can they make cloth of the bark of this tree?" "Yes: Captain

Cook, speaking of this cloth, says that it is very beautiful, and that the islanders of Otaheite succeed perfectly well in dying it red. These people have two other kinds of cloth, made of the bark of two different trees; but these kinds are inferior to the first." "I should like to know how they contrive to change it into cloth." "You may see many curious and interesting particulars on that subject in Captain Cook's voyages. Voyages and travels are a kind of reading equally useful and agreeable. They have all the charms of romances without their insipid and dangerous frivolity. They give ideas of geography more certain than those obtained from systems, and procure a very extensive and varied knowledge of the facts of natural history, which is of daily utility."

As I spoke thus to Gustavus we arrived at the border destined to Alpine and North American plants. We saluted the plant called *linum*, which covers all the mountains of Lapland; the *clematis*, or traveller's joy, which has the scent of the orange flower; the tulip tree, the leaves of which are in the shape of a knapsack; and the cape heath, covered with white flowers; then passing through a little arched path we entered that large part of the garden called the School. It is there that plants are arranged for the benefit of students, according to their families. An admirable order reigns in this distribution.

"This," said I to Gustavus, "is a real republic. A learned hand has divided the ground, has collected in it a whole people of plants, and has assigned to them each their quarter and their proper habitation. All the families springing from the same origin lodge apart in distinct cantons, and form so many different societies. Number here causes no confusion. Order and neatness reign every where. For fear that the citizens of this state should injure each other, and particularly that the great ones should starve the little ones, by attracting to themselves all the fat of the land, a space sufficient for their support has been assured to the smallest plants, by setting apart the trees which require to be fed in abundance, and lodge more at large. Or if these are sometimes placed near the others, and obliged to live together with them, the strongest trees themselves are held under laws

laws so severe, that they never impoverish the humblest individual, and all subsist, by the care of a good government, in the most perfect intelligence.

“But let us advance. You recognize here several young trees that I have no occasion to name to you. There is the weeping willow, which has certainly been called so on account of its branches, which hang in disorder to the ground, like the hair of a person in great affliction. Here you see the *Cœnada* birch, which the savages use to make canoes and different vessels. You see farther the jasper maple, whose smooth and marbled bark seems laboured with the greatest art.”

“And what is this, the white and polished bark of which falls from the trunk in large pieces?” “That is the plantain. This tree grows very high, and is esteemed for its shade. Pliny, in his *Natural History*, mentions the time when the plantain was introduced into Italy. The first that were planted at Rome appeared so beautiful, that for a long time money was demanded of all who came to sit under their shade. The rage for planting them became so great, that, according to Pliny, several private people, in order to make them grow faster, tried to water the roots with wine.”

Here Gustavus, as he listened to me, was going, thoughtlessly, to pluck a leave from a little shrub. I fortunately perceived it, and, turning away his hand, “Ah, child,” said I, “what are you going to do?” “What! is there any great harm in taking a leaf?” “Yes. You have just escaped danger. That is a poisonous shrub.” “What did that signify? I was not going to eat the leaf.” “No; you would not have eaten it, but in gathering the leaf you would have got on your hand some drops of a very caustic juice, and the touch of one of these drops would have been sufficient to give you a very dangerous *erisypelus*, as it lately happened to a poor gardener’s boy, who had not more experience than you, but who will be careful for the future not to touch this shrub incautiously.” “If this be the case, you did well to warn me.” “You should conclude from it, my young friend, that when one says to children, touch nothing, do not do that, children ought to rest on the expe-

rience of others, and obey immediately." "And what is the name of this vile shrub? Where does it come from?" "It is the *rhus toxicodendrum*, a native of North America." "Let us go away, I do not like its neighbourhood. Besides, I see there another shrub, by the side of which is written *rhus vernix*, and I have now an antipathy for this word *rhus*." "This antipathy is unjust, my dear Gustavus. This *rhus vernix* is a shrub so precious, that it more than compensates all the bad qualities of its neighbour. You have heard of the famous Chinese varnish. It distils like a gum from this tree. In China they varnish with this gum tables, chairs, cabinets, bedsteads, and even utensils of tin and brass. It gives them a wonderful lustre, particularly when it is mixed with figures of gold and silver."

"How in one family there are often good and bad people! But, talking of foreign trees, tell me something of the Indian chestnut (*horse chestnut*). I suppose it comes from India, by the name?" "Yes." "And when was it brought?" "The horse-chestnut was brought from the east in 1620." "Do you know the name of the person who brought it?" "His name was Bachelier. The first tree was planted at Paris in the garden of the hotel de Soubise. Soon after another was planted in the Botanical Garden, which bears date about that period. This last lived a very long life. It died in 1765, the senior of all the horse-chestnut trees in France. Some branches were cut from its trunk, which have been deposited in the Cabinet of Natural History."

THE ARRIVAL OF THE ELEPHANTS.

"Come, my dear boy, follow me to the Botanical Garden, the elephants are arrived." At these words Gustavus cried out, transported with joy, "O let us make haste, then; I am quite impatient to see those extraordinary animals, of which I have heard so often."

We set out immediately. The nearer we approached to the garden the more our impatience increased; and as Gustavus perceived that my curiosity equalled his, he asked me if I had ever seen an elephant? "Never," replied I; "and many older people would give you the same answer." "It

is,

is, then; a great many years since an elephant has been seen at Paris? These animals must be very rare." "Yes; these animals are very rare in Europe, but they are pretty common in the countries of which they are natives. What makes them so scarce in our countries, is the extreme difficulty of conveying them. In 1668 the king of Portugal sent one, four years old, to Louis the Fourteenth. It was lodged in the Menagerie of Versailles, where it only lived thirteen years, notwithstanding all the care that was taken of it, and the abundance of food given it."

"Where do elephants live?" asked Gustavus." "These monstrous animals," replied I, "inhabit all the southern parts of Africa and Asia. There are many in Ceylon, the Mogul's empire, Bengal, Siam, Pegu, and all the other parts of India. They are, perhaps, more numerous in all the southern provinces of Africa, except certain districts, which they have abandoned, because they had become too populous. They are faithful to their country, and constant to their climate; for though they can live in temperate regions, it does not appear that they have ever been tempted to settle, or even to travel into them."

"And where do the elephants come from that we are going to see? How old are they? What is their history?"

"They were born in the island of Ceylon; thence they were sent to Holland. They were then a year old. The Stadtholder had them placed in his menagerie, where they passed fourteen years. In consequence of the conquest of Holland the elephants of the menagerie of Loo fell into the hands of the French; they have been sent to us as trophies of our victories. Thus, in former days, Alexander the Great sent into Greece, where none had ever seen one before, the elephants which he had taken from king Porus."

As I was giving these little particulars to Gustavus we arrived at the Botanical Garden, and advancing towards the amphitheatre, we saw a large gate on the left hand, before which several curious people were already placed, who were patiently expecting its opening.

"This," said Gustavus, "is certainly the way that people go in to see the elephants; how happens it that the gate is shut?" "We must imitate the patience of these people,"

people," replied I. "The elephants must certainly be fatigued: they cannot yet be seen. Let us seat ourselves on the grass of the labyrinth till the door is opened. We shall there breathe the fresh morning air; and thence extending our view over the whole extent of the garden, we shall observe the rapid progress of vegetation, and the pretty flowers which spring scatters over the turf."

We were accordingly taking the road to the labyrinth, when one of the professors of the Botanical Garden presented himself to us. He had come early to walk in the groves, and to enjoy the pleasant coolness of the morning. He had no difficulty in guessing the motive which had brought us to the garden. "You are coming to see the elephants," said he, courteously addressing us. "Yes," replied Gustavus immediately, "cannot we see them?" The professor observed to us, that to spare the animals, who were a little fatigued, both with the jolting of their journey, and the concourse of spectators, it had been determined only to shew them to the public every other day, from eleven o'clock till three.

"O heavens!" cried the impatient Gustavus, "we are so near them, and must return without seeing them!" "I feel," replied the professor, "that such a sacrifice would be painful, and I shall be happy to assist in sparing it you. Let us endeavour to find the *cornac*; if he is not gone out, you may follow him when he goes by a back way to carry food to the two elephants."

The professor had the goodness to find the *cornac*, and to recommend us to him. This latter is an elderly man, an Englishman by birth, but who has almost always lived in Holland, where he had been for ten years keeper of the elephants, which he still manages, and hopes never to leave. His name is Thompson. His inexperience in hearing and speaking our language renders his conversation very difficult to follow. He seems to express himself with pain, and his accent partakes of the English and the Dutch. He went before us, walking with the help of a stick, and, by several windings, he at length introduced us within the inclosure where the two elephants are lodged, the compartments of which

which are built with great solidity, and communicate with each other by an enormous aperture.

We then saw those gigantic animals, whose bodies resemble portions of mountains, and whose monstrous legs are shaped like columns. Their trunks were passed through the bars, and directed towards the *cornac*; and the loud and impetuous snorting that proceeded from them, was the expression of the joy of the animals at the sight of their benefactor. We contemplated them for some minutes with an interest mingled with astonishment. Our eyes observed the singularity of their structure, and the admirable play of their trunk, with which they picked up pieces of bread from the ground, and even from the hands of those who presented them.

When we had a little familiarized ourselves with their colossal figures, Gustavus began to ask me several questions with respect to elephants, which I did my best to answer. "I suppose," said he, "that the elephant is the largest animal that can be seen?" "Yes, the elephant is the largest of land animals, as the whale is of fishes, and the ostrich of birds. These, which you see, are not nearly the biggest of their kind. They are only about nine feet high, whilst in the climate of the south of India, and the east of Africa, the native country, and most suitable habitation of these animals, some are seen fourteen or fifteen feet in height, and even more, as it is asserted. It appears, from the accounts of travellers, that the island of Ceylon in particular produces elephants superior to all those of Asia, more in courage and intelligence than in size. They owe these qualities to their education, which is brought to greater perfection in Ceylon than elsewhere, as well as to the nature of the land in this island, which rises in mountains, ascending gradually towards its center; and where the heat, though very great, is not so excessive as in Senegal, in Guinea, and in all the other western parts of Africa."

Here Gustavus interrupted me. "Before you go any farther," said he, "I have one question to ask, whence comes the word elephant? and why are these animals called by that name?"

"This

"This name is derived from the oriental *elphil*, which also signifies elephant. *Phil*, or *fil*, is a Chaldean word, which signifies ivory. Now, you know, that ivory is the substance of which the tusks of this monstrous animal are made, whence you may conclude, that the name elephant is synonymous to the animal which produces ivory."

"But where are these elephants tusks? I cannot discover them?" "You look for them in vain; they lost them on the journey." "How did that happen?" "It is said that, enraged at being confined in the cages which had been made in Holland to remove them in, they attempted to break through them, and that their efforts were so great, that their tusks yielded under them."

"What shape are their tusks?" "They are several feet long, and bent upwards. They spring from the upper jaw, and are very strong. The animal uses them with vigour against its enemies, either in attack or defence. They are hollow at their origin, and for half their length; the rest, to the point, is solid. The female is armed in the same manner as the male. These tusks are so strong, that the elephant in the menagerie of Versailles, which I mentioned to you, had employed them in making two holes in the two sides of a stone pillar which proceeded from the wall of its den. When it wished to sleep it pushed its tusks into these holes, and this served him for a support."

"I think these two offensive weapons must give a terrible appearance to the head of the elephant, which is already so monstrous. Without them its air seems to me very gentle."

"Gentleness is, indeed, the natural characteristic of the elephant?" "This animal, in its wild state, is neither sanguinary nor cruel. It never abuses its weapons or its strength. It only employs them to defend itself, or protect its fellows."

"What! do elephants defend each other when they are attacked?" "Yes. The elephant is social in its manners. They are rarely seen straying or solitary. They commonly march in a body. The eldest leads the troop; the second in age urges it on by going behind; the young and weak ones are placed in the middle; the mothers carry their little
ones,

ones, and hold them embraced with their trunk. They only preserve this order, indeed, in dangerous marches, when they go to feed upon cultivated lands; but though they walk with less precaution among forests and solitudes, they never separate so far as to be out of assistance and warnings."

"You say that their mothers carry their young ones, holding them embraced with their trunk; is the trunk strong enough for that?" "O, yes. This flexible instrument, with which the elephant does all that can be performed by the hand, even untying strings, and picking up the smallest objects, is, at the same time, an instrument of wonderful force. The smallest elephants, those of Africa, freely lift a weight of two hundred pounds with their trunks, and place it themselves on their shoulders. They can take a large quantity of water in this trunk, which they throw upwards, or round them, to the distance of three or four yards. They can carry more than a thousand pounds weight on their tusks. Their trunk serves them to bear up middling sized trees, and to break off branches, when they want to make themselves a passage through a forest. When the elephant applies the edge of the extremity of his trunk to any body, and, at the same time, drawing his breath, the body remains attached to the trunk, and follows its different motions."

Gustavus was never weary of contemplating this admirable instrument. He saw the two elephants with their trunks pick up the hay scattered about their stables, make it up in bundles, and carry it to their mouths with extraordinary address.

"You see," said I, "what services the trunk renders to these animals. The neck of the elephant is too short to allow him to stoop his head to the ground, and to graze with his mouth, or drink easily. If he wants to eat, he lets down his trunk, tears up the grass, and makes bundles of it, which he carries to his mouth. When he is thirsty he dips the end of his trunk in water, and, by inspiring, fills its whole cavity with it; he then bends it downwards to carry it to his mouth, and inserts it in the throat beyond the

the epiglottis. The water, propelled by simple expiration, descends into the gullet; and by this admirable provision of nature it does not enter the windpipe, which would otherwise necessarily have happened."

"Do you not observe," said Gustavus to me, "how small the eyes of the elephant are in proportion to the size of its body?" "Yes, but small as they are these eyes are bright and intelligent; and what distinguishes them from those of almost all other animals, is their pathetic expression of sentiment, and the almost rational conduct of all their motions. Observe how this turns its eyes with gentleness towards the *cornac*. It has a look of kindness for him. If Thompson were now to speak to it, you would see the eye of the elephant watching his words, and penetrating his will, even before his voice had made it manifest. These animals sometimes express the excess of their joy by tears. If you had been present at the interview of the two elephants, at the moment of their arrival at the Botanical Garden, you would have seen an example of this. Having been separated during the whole journey, they had not seen each other since their departure from the menagerie of Loo. Judge of their transports when they found each other again on their arrival! Both equally affected, they caressed each other with their trunks, and made the air resound with their cries of joy. Their eyes, it is said, were moistened with tears. It was a most affecting scene."

"It appears, then, that the elephant has a great deal of instinct and intelligence?"

"Yes; this animal is so susceptible of attachment, affection, and gratitude, as to pine with grief when it has lost its master. It is so easily tamed, and submits to so many different exercises, that one is surprized that so heavy a beast can so easily assume the habits given to it."

(To be continued.)

FIRST PRIZE ESSAY,

On the Subject proposed for No. 18.

"To prove by argument and example the advantages of early piety."

By Master R. V. YATES, not 16,

Of Mr. Corrie's Academy, Birchen-green, Birmingham.

THE condition of man, on his entrance into life, is that of a mariner first launching out upon the rough and boisterous deep. Life is this ocean of troubles; our passions winds, that toss us continually to and fro; and every pleasure and every delight a rock, against which our fragile bark may split. In a situation of so much peril, where our everlasting happiness is concerned, it is a matter of the last importance that we immediately choose a skilful pilot to steer us securely into the destined harbour. This pilot, so necessary for our salvation, is piety.

I shall, in this paper, confine myself to a view of the advantages derived from early piety to God alone, as this appears, first, from its being the more common signification of the word; and, secondly, from the little necessity of recommending early *filial* affection to have been the intention of the question. The silent whisper of Nature sufficiently inclines us in youth to love and reverence our relations and friends; but veneration for the Deity, whether from ignorance, levity, or contempt, is, alas! too frequently neglected. Cold, however, and insensible must that heart be, which, after a view of the profusion of good his beneficent hand pours around, can still forbear to beat with the warm pulsations of love, gratitude, and veneration towards the author of its felicity! Strangely audacious that man, who can contemplate the grandeur and majesty which his works every where display, and still refuse to pay him that tribute of adoration his greatness merits and demands!

Piety keeps the gates of heaven, and through her intercession alone can we hope to be admitted to an enjoyment of the fruitions of eternity. Virtue is her inseparable companion, for virtue is pleasing to the Deity; and will not every one whose mind is duly impressed with a sense of his omnipotence and goodness, seek to insure his favour and protec-

tion by doing what he approves? If we even disregard these considerations, we shall find sufficient incentives to piety in the *temporal* advantages which may be thence derived. It is admirably adapted to improve the understanding, to refine the heart, and assist mankind in their favourite pursuits of pleasure, prosperity, and honour.

By warding off the evil of intemperance and luxury from those who make pleasure their only business in life, by leading them from the pernicious scene of midnight revelry to the altar of the Supreme Being, it preserves health (the sister of content and happiness) and secures them from those inquietudes which would embitter every enjoyment. It increases their relish for other pleasures, and besides adds those of a large, flourishing, cultivated mind, "able to comprehend and interpret the works of man, of God."

Is worldly prosperity the end towards which your wishes are directed? In the acquisition of this, too, piety will be found of the greatest service. It teaches prudence, diligence, and frugality; guards us from the expenses of dissipation, and shews whatever is sordid and sensual.

As it leads to a liberal, disinterested, and noble conduct, it is highly conducive to honour; and we accordingly find, that those who are distinguished in piety are no less eminent for their pure and unfulled reputation.

But it is in the hour of sorrow chiefly, when the heart bleeds with some wound of recent misfortune, when the body is racked with excruciating pain, or worn away by lingering illness, and still more when death approaches, that the force and consolation of piety are most sensibly felt. Her followers are in a manner raised above worldly misfortunes; they rejoice in God's continual guidance, influence, and protection; and though deserted by every earthly friend, solace themselves with the thoughts of one who will never forsake them.

It was piety that supported the amiable and unfortunate Lady Jane Gray in the melancholy gloom of her prison, and fortified Addison with peace and tranquillity in the solemn hour of death. It was piety that raised the spirits of Mrs. Rowe with expectation of eternal bliss, and infused into her breast that divine satisfaction and transport which, during

during the course of a long and happy life, she had never before experienced. Piety has power to brighten the darkest prospect, to mitigate the most poignant grief and blunt the edge of every calamity. "Length of days is in her right-hand, and in her left-hand riches and honour; her ways are ways of pleasantness, and all her paths are peace."

Since, then, piety is so highly beneficial to mankind, it is the part of every person who is truly wise, to choose her in youth for his guide and companion. Youth is the season when the habits are formed and characters determined; the mind, susceptible of every impression, soon becomes virtuous or vicious, and continues ever after the same.

The noble elephant leads forth her young into surrounding forests, and teaches them to crop the verdant branches; they, when grown up, seek after the same food, and the stately palm falls prostrate beneath their stroke. The ravenous wolf, on the contrary, learns to embroe its infant jaws in blood; when it has attained its full size and vigour, and possesses a den of its own, it still delights in carnage, and is still the dread, the detestation, and the horror of the flock. Thus it is with man. If his youth is passed in beneficence, piety, and virtue, he will be all his life beloved by his friends, honoured by mankind, and favoured by the Deity; but if he is bred up in wickedness, ignorance, and impiety, he will always continue a scourge to his acquaintance, a reproach to his country, and a marked object of God's peculiar vengeance.

PRIZE TRANSLATION.

By Master W. ROBERTS, aged 15, of Bristol.

I HAVE frequently observed, that those actions and sayings, of illustrious persons of both sexes, which fame has chiefly celebrated, are not always the greatest; and am confirmed in my opinion by a conversation I yesterday enjoyed with Fannia. This lady is grand-daughter to the famous Arria, who inspired her husband with a contempt of death by her own great example. She gratified me with many particulars concerning Arria, which, though less noticed, are not inferior to that action so loudly celebrated.

And I am convinced the perusal of them will excite your admiration as much as the relation did mine.

Her husband, Cæcinna Pætus, and her son, were both, at the same time, dangerously ill. The son died. He was a youth endowed with uncommon beauty and equal modesty; and not less endeared to his parents on account of his virtues than by the ties of blood. His mother, though deeply afflicted, managed his funeral so privately, that Pætus was entirely ignorant of the catastrophe. Whenever she entered his chamber she pretended her son was better; and to the frequent enquiries he made about him evasively answered that he had rested well, or eaten with an appetite. But when, spite of her efforts, the long restrained tears were bursting forth, she would retire, and, having given vent to her grief, re-enter with dry eyes, and her countenance composed, as if she had dismissed her sorrow at the entrance. That action, indeed, was truly heroic, when, grasping the poniard, she plunged it in her breast, then drew it reeking from the wound, and presented to her husband with that ever memorable, nay almost divine expression, "My Pætus it is not painful." But when she spoke and acted thus she had the hopes of immortal glory in her view. How great, then, was it (without any such incentives to inspire her) to conceal her grief, and still to seem the mother, though her son was lost for ever.

Scribonianus, who had taken arms in Illyricum against Claudius, being slain, Pætus, who was of his party, was brought prisoner to Rome. When he was ascending the ship Atria intreated of the soldiers permission to accompany him: "For certainly," said she, "you will give a man of consular dignity a few slaves to attend him, but I alone will perform their offices." Denied her request, she hired a small fishing-boat, and determined to follow the ship. Arriving at Rome she met the wife of Scribonianus, near the palace of Claudius, who pressing her to profit by a discovery of what she knew of the rebellion, "What!" said she, "shall I listen to thee, who still survive thy husband, though murdered in thy arms?" From which it is plain, that her noble death was not the effect of sudden passion.

Thrasea, her son-in-law, endeavouring to dissuade her
from

from her determination of sharing the fate of Pætus, among other arguments said, "Were I to be deprived of life, would you persuade your daughter, then, to perish with me?" "I would," she replied, "had she lived with you so long and so happily as I have lived with Pætus." This answer much increased the anxiety of her relations, who watching her more attentively, she told them their care was vain; and added, "You may, indeed, compel me to effectuate my death more painfully, but you cannot prevent it." On saying this she sprang from her seat, and dashing her head with the greatest force against the wall, fell senseless to the ground. Being revived, she said, "I told you, you would compel me to devise more cruel methods of death, if you still persist in hindering me from easier means."

Do you not perceive, my friend, a greatness in these actions equal to the famed expression, "Pætus, it is not painful?" to which, indeed, they seem to have led the way: yet that has acquired the greatest fame, whilst these are suffered to sink into oblivion. From which I conclude, as I remarked in the beginning of my letter, that those actions are not always the most noble that have gained the greatest celebrity. Adieu.

ARITHMETICAL PRIZE SOLUTION.

WE have received so many excellent answers to the arithmetical question, proposed in the fifteenth number of the Preceptor, that we have found it a difficult task to make a proper selection.

The following solution, sent to us by Master WOOD, of Twyford School, claims our first prize.

$300 \text{ feet} \times 25 \times 6 = 45,000 \text{ feet}$, cut by 70 men in 18 days. $900 \text{ feet} \times 30 \times 7 = 189,000 \text{ feet}$, new piece.

$45,000 \text{ feet} \div 18 = 2500 \text{ feet}$, which $\times 5 = 12,500 \text{ feet}$, cut by 70 men in five days, consequently they can cut the same quantity of the new piece in four days.

Then $12,500 \text{ feet} \div 4 \times 10 = 31,250 \text{ feet}$ of the new piece cut by 70 men in 10 days. Then $189,000 - 31,250 = 157,750 \text{ feet}$ to be cut through by the additional men,

and $31,250 \div 10 = 3125$, which $\times 3 = 9375$ feet cut in three days by the 70 men, which is performed in two days by 80 of the additional workmen: therefore,

	Men.	Days	Feet.	Men.
As	{ 80	: 2	:: 9375	} = 269 $\frac{2125}{9375}$ = 269 $\frac{17}{75}$
	{ —	: 10	:: 157750	

or decimally 269,226 men.

So that 269 is the number of men employed in the new job; 31,250 feet is the quantity of land cut by the 70 men; and 157,750 is the number of feet cut by the additional workmen.

GENERAL

ADJUDICATION OF THE PRIZES

GIVEN WITH THE EIGHTEENTH NUMBER.

CLASS I.

ENGLISH COMPOSITION.

To prove by argument and example the advantages of early piety.

The first prize has been awarded to Master R. V. YATES, of Mr. Corrie's academy, Birmingham, aged not 16. Attested by Mr. Corrie.

To receive Books, value Three Guineas.

The second to Miss K. NICHOLSON, of Rochester, not 16. Attested by her aunt, Miss Maudsley.

To receive a Silver Medal, value Half-a-guinea.

The third to Master J. R. BEDDOME, of Messrs. Palmers' school, Hackney, aged 14. Attested by Mr. Palmer.

To receive Irving's Elements of English Composition.

The fourth to Miss M. H. JOHNSON, of the Castle School, Wisbech, not 13. Attested by Mrs. Burrell, governess.

To receive Miss More's Sacred Dramas.

The fifth to Master W. BEDDOME, of Messrs. Palmers' school, aged 13 years two months. Attested by Mrs. Dawkes.

To receive Pratt's and Mavor's Classical English Poetry.

The

The sixth to Miss HANNAH HARWOOD, of Birmingham, aged 15 years and four months. Attested by her mother.

To receive Dr. Mavor's Natural History.

The seventh to Master R. W. NANTON, of Messrs. Palmers' school, aged 15. Attested by Mr. Hodgson, of Hackney.

To receive Dr. Gregory's Elements of a Polite Education.

The eighth to Miss MARIA BARR, of Mrs. Robins's school, Worcester, aged 13. Attested by Mrs. Robins.

To receive Pratt's and Mavor's Classical English Poetry.

The ninth to Master G. EDWARDS, of Barnard Castle School, aged 15. Attested by Mr. Pybus, classical assistant.

To receive Dr. Mavor's Plutarch.

The tenth to Master H. OKES, of Barningham School, aged 12. Attested by Mr. Newby, master.

To receive Dr. Gregory's Polite Education.

Miss LEWIS would have been entitled to a prize, had she not been excluded by having received a second prize in the sixteenth number.

The number of excellent papers presented on this occasion has been to us at once a source of pride and of pain. Of honest pride, because it evinces the great utility of our publication; and of regret, because our means are limited as to the rewards of merit. The papers to which we allude evince equally the good and pious dispositions and the excellent talents of our young candidates; and in the following list, all of which are deserving of COMMENDATION, there are many which are little, if at all, inferior to those which have obtained prizes.

Master James Ainger, above 12, pupil of Mr. G. Burges, Whit-
tlesea

Miss Elizabeth Ainger, under the specified age, of ditto

Master Major Ainger, aged above 15, of ditto

Master Henry Biden, not 14, pupil of Mr. M. Newby, Birmingham

Miss C. M. J. Cooper, aged 14, daughter of Mrs. A. Cooper,
Dursley

Master John Clarke, not 14, of Barnard Castle School

Miss Elizabeth Ann Chase, aged 15 years and four months, niece
of Mr. H. Neale, of Luton

Miss M. Dickenson, aged 12, of the ladies boarding-school, at Bal-
lam-hill, near Clapham

Miss Amelia Davis, not 14, daughter of Mr. Joseph Davis, of
Painfwick

Miss

- Miss *Eliza Dent*, not 11, of Mrs. Dent's boarding-school, Northampton
- Miss *Maria Dimock*, aged 12, of Mrs. Bearcroft's boarding-school, Worcester
- Master *F. Dickson*, aged 14, of Mess. Palmers' academy, Hackney
- Master *John Finch*, not 16, of Duncroft, near Staines
- Miss *Caroline Field*, aged 14, educated at Smith's, late Mrs. Ewes's school, Birmingham
- Master *Joseph Fallowfield*, aged 14 years and eight months, of Barnard Castle School
- Miss *Hannah Gill*, aged 14, of Mrs. Robins's school, Worcester
- Master *Thomas Gibson*, aged 14 years and one month, of Barnard Castle School
- Miss *Maria Hague*, aged 14 years and three months, at Mrs. Hague's, Northampton
- Miss *A. Littlewood*, aged 15 years and seven months, of Castle School, Wisbeach
- Miss *Sarah Littlewood*, aged 12 years and six months, of ditto
- Miss *Jane Lewis*, above 15, private pupil of Mrs. E. Elderton, of North Baldesley, Hants
- Miss *Sophia Lewis*, aged 13, of Mrs. Robins's school, Worcester
- Miss *S. Macmichael*, aged 13, pupil of Mrs. M. Robins, Worcester
- Miss *Ann Hardy*, not 15, of Castle School, Wisbeach
- Master *D. Harvey*, aged 15, of Mr. Dickson's, Broad-street, London
- Miss *Hannah Hancox*, aged 12, of Mrs. Robins's boarding-school, Worcester
- Master *Richard Isbell*, aged 14 years and three months, son of Mr. R. Isbell, of Stonehouse
- Master *Henry Jones*, not 14, of Mr. Newby's school, Barningham
- Miss *Anne Lewis*, not 15, of Mrs. Robins's boarding school, Worcester
- Miss *Catharine Maydwell*, aged 14, pupil of Miss C. Maydwell, of Whittlesea
- Miss *S. A. Neale*, aged 15, of Grove House boarding-school, Kentish-town
- Miss *Catharine Osborn*, aged 13, of Mrs. Robins's school, Worcester
- Miss *Frances Osborn*, aged 15 years and a half old, of ditto
- Miss *C. Parker*, not 14, of Mettingham, near Bunbury
- Miss *Caroline Parker*, aged 10 years and seven months, of Dunstable
- Miss *M. A. Richards*, aged 15 years, pupil of Mesdames Dupont and Aublay's school, Birmingham
- Master *W. Roberts*, aged 15, of Bristol
- Master *T. Ridley*, aged 14 years and four months, of Mr. Newby's school, Barningham
- Master *R. S. Sutherland*, aged 15, of Wooburn, Bedfordshire
- Master *Richard Steele*, aged 13 years and seven months, of Barnard Castle School

Miss *J. A. Smith*, above 12, of Mr. Burges's school, Whittlesea
 Miss *E. Selby*, not 13, of Newcastle-upon-Tyne
 Master *W. Thorpe*, not 13, of Whittlesea
 Master *Henry Taylor*, aged 13 years and eight months, of Palgrave
 Master *J. P. Wood*, aged 12 years and 11 months, of Barnard
 Castle School
 Master *W. Wood*, aged 14 years and eight months, of Barnard
 Castle School
 Miss *C. A. Waldie*, not 13, of Newcastle-upon-Tyne
 Miss *M. J. Waldie*, aged 15, of ditto
 Miss *M. Young*, not 15, of Ballam-hill boarding-school, near
 Clapham

CLASS II.

GENERAL ADJUDICATION OF THE PRIZES ON THE SECOND SUBJECT.

TRANSLATION FROM THE LATIN.

The first prize has been awarded to Master *W. ROBERTS*, of
 Bristol, aged 15. Attested by his father, and his tutor, Mr. *J.*
Wharton.

To receive Books, value two guineas.

The second to Master *R. V. YATES*, of Mr. Corrie's school,
 Birmingham, aged 15. Attested by Mr Corrie.

To receive a silver medal, value five shillings.

The third to Miss *ELIZA SINCLAIRE*, of Belfast, now re-
 siding at Dr. Gregory's, Leyton, aged not 16. Attested by Mrs.
Gregory.

To receive Dr. Mavor's British Nepos.

The fourth to Master *JOHN MAVOR*, of Woodstock, aged
 15 years and a half. Attested by his father.

To receive Dr. Gregory's Polite Education.

The fifth to Master *AARON ASHER GOLDSMID*, of
 Goodman's-fields, aged not 16. Attested by his father and Dr.
Montucci.

*To receive Prati's and Mavor's Classical English
 Poetry.*

The sixth to Master *G. R. C. WILCOCKE*, of Messrs. Pal-
 mers' school, Hackney, aged 14. Attested by his mother.

To receive Irving's Elements of English Composition.

The seventh to Master *THOMAS TAYLOR*, of Middleton
 School, aged 15. Attested by Mr. Grier.

To receive Dr. Mavor's Nepos.

The eighth to Master JOSIAH CONDER, of Messrs. Palmers' school, aged under 12. Attested by his father.

To receive Dr. Mavor's Plutarch.

Master JOHN GREGORY, of the same school, would have been entitled to a prize, had he not been excluded by having so lately received a second prize.

The following are deserving of COMMENDATION:

Master *Robert White Almond*, under the specified age, late of the Rev. T. Blanchard's academy, Nottingham

Master *W. Beddome*, aged 13 years and two months, late of Messrs. Palmers' school, Hackney

Master *Henry Biden*, under 14, pupil of Mr. M. Newby, Birmingham

Master *John Clarke*, of Barnard Castle School

Master *J. T. Coare*, aged 15, of Mr. Coar's boarding-school, at Tottenham

Master *G. Edwards*, under the age specified, of Barnard Castle School

Master *John Finch*, under 16, pupil of Mr. J. H. Wicks, Egham, Surrey

Master *Joseph Fallowfield*, aged 11 years and eight months, of Barnard Castle School

Master *Joseph Frances*, aged 14, pupil of Mr. W. Paull, of Castle Carey

Master *T. Gibson*, aged 14 years and one month, of Barnard Castle School

Master *John Garton*, not 13, of the Rev. J. Blanchard's academy, Nottingham

Master *John Gregory*, not 13, son of Mr. G. Gregory, of Messrs. Palmers' school, Hackney.

Master *J. S. Harford*, aged 15, of Peterley-house Academy

Master *John Hopkinson*, aged 12 years and six months, son of the Rev. S. Hopkinson, vicar of Moston, near Bourn, Leicestershire

Master *Edward Lloyd*, under 11, of Peterley-house, Great Missenden

Master *James Lawson*, aged 14 years and six months, of the Rev. Mr. Blanchard's academy, Nottingham

Master *W. Mills*, aged 13, pupil of Mr. S. Dewe, of Buntingford, Herts

Master *P. J. Martin*, aged 15, attested by his brother, Mr. T. M. both of Ryegate, Surrey

Master *Charles Hall*, above 14, of Mr. Wicks's academy, Englefield-green, Surrey

Master *John Kirisop*, aged 15 years and nine months, son of Mr. J. K. attorney, at Newcastle-upon-Tyne

Miss *A. S. Mackie*, aged 12 years and three months, daughter of J. Mackie, M.D. of Southampton.

Master *J. H. Pecks*, aged 15 years and seven months, of Mr. Wicks's school, Egham, Surrey

Master

Master *J. C. Rayner*, aged 13 years and 11 months, son of Mr. Richard R. of Birmingham

Master *W. Searle*, aged 11 years and six months, pupil of Mr. Jamieson, Royston, Herts

Master *Charles Studd*, aged 13 years and eight months, of Palgrave

Master *Richard Steele*, aged 13 years and seven months, of Barnard Castle School

Master *George Watson*, aged 13 years and four months, of Barnard Castle School

Master *W. Wood*, aged 14 years and eight months, of ditto

Master *J. P. Wood*, aged 12 years and 11 months, of ditto

Master *S. Wright*, aged 15 years and one month, of Englefield-house Academy, Egham, Surrey

CLASS III.

ADJUDICATION of the ARITHMETICAL QUESTION.

The first prize is adjudged to Master H. F. WOOD, aged 14, of Mr. Hanington's academy, near Winchester. Attested by Mr. Hanington.

To receive Books, value two guineas.

The second prize is adjudged to Master JOSEPH BENNETT, aged 14 years and a half, Nottingham. Attested by Mr. J. Bennett and Mr. W. Harrison.

To receive Scientific Dialogues, two vols.

The third prize is adjudged to Master JAMES BIBBY, under 14. Attested by Mr. John Taylor, Blackley, near Manchester.

To receive Dr. Mavor's British Nepos.

The fourth prize is adjudged to Master HENRY JONES, under 14. Attested by Mr. Mark Newby, of Barningham, near Greta Bridge, Yorkshire.

To receive Dr. Mavor's Plutarch.

Master G. F. DICKSON, aged 14, claims the fifth prize. Attested by Mr. S. Palmer, jun. of Hackney.

To receive Dr. Mavor's Natural History.

Master RICHARD NANTON, of the same academy, merits our commendation; but his conclusion is erroneous.

The sixth prize is adjudged to Master CROUDACE, of Lanchester School, aged 13. Attested by Mr. John Rutherford and Mr. R. Croudace.

To receive Dr. Gregory's Elements of a Polite Education.

The seventh prize is adjudged to Master W. NIGHTINGALE, of Salford, aged 13 years and a quarter. Attested by his father.

To receive Irving's Elements of English Composition.

The

The eighth prize is adjudged to Master HESLOP BELL, of Barnard Castle Academy, under 15. Attested by Mr. J. Pybus.

To receive Pratt's and Mavor's Classical English Poetry.

We regret that the number of our prizes will not permit us to distinguish with more than our hearty COMMENDATIONS the following young persons, all of whom have shewn considerable proficiency in figures.

Master *Theophilus Williams*, of Rotherham School. Master *Samuel Parlour*, and Master *W. J. Fox*, both of Norwich. Master *Parker*, of Peterborough. Master *William Price*, of Portsea. Masters *Thomas Ridley*, *John Atkinson*, *Richard Lamb*, and *Richard Philpott*, of Barningham, Yorkshire, all attested by Mr. Mark Newby. Master *John Elliot*, of Sheffield. Master *J. Abraham*, of Hull academy. Miss *Mary Parken*, of Dunstable; and Master *John Eadon*.

Very considerable merit attaches also to the exertions of the following young gentlemen.

Master *John Hill*, and Master *Benjamin Betts*, of Shipdham, Norfolk. Master *George Burrell*, of London Bridge. Master *Watson*, of Market Harbro', Leicestershire. Master *James Martin*, of Henfield, aged only 10 years and four months; and Master *Inkersole*, of St. Neot's.

We can speak with real approbation of *T. Clifton's* unattested answer to our problem, but not so of the specimens of versification which he has sent in the same inclosure.

NEW PRIZE SUBJECTS FOR No. XXI.

Answers to be received, post paid, and fully authenticated, on or before the Fifth of October.

CLASS I.

EXERCISE IN ENGLISH COMPOSITION.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

A fictitious narrative of a journey to Bath and Bristol, the traveller taking what route he pleases, with a description of whatever is remarkable in the different places.

The best narrative to entitle the writer to a pair of nine inch Globes; the next best to a silver medal, value ten shillings and sixpence; and the eight next best to books value five shillings each.

CLASS

CLASS II.

TRANSLATION FROM THE FRENCH.

FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COMPLETED THEIR SIXTEENTH YEAR.

A poetical Translation of the following Verses of M. Deshoulières, with which we have been favoured by Dr. Montucci.

Dan ces prés fleuris
 Qu' arrose la Seine,
 Cherchez qui vous mène,
 Mes chères brebis :
 J'ai fait, pour vous rendre
 Le destin plus doux,
 Ce qu'on peut attendre
 D'une amitié tendre ;
 Mais son long courroux
 Détruit, empoisonné
 Tous mes soins pour vous,
 Et vous abandonné
 Aux fureurs des loups.
 Seriez vous leur proie,
 Aimable troupeau ?
 Vous, de ce hameau
 L'honneur et la joie ;
 Vous qui, gras et beau,
 Me donniez sans cesse
 Sur l'herbette épaisse
 Un plaisir nouveau !
 Que je vous regrette !
 Mais il faut céder.
 Sans chien, sans houlette,
 Puis-je vous garder ?
 L'injuste fortune
 Me les a ravés.
 En vain j' importune
 Le ciel par mes cris :
 Il rit de mes craintes,
 Et sourd à mes plaintes,
 Houlette, ni chien,
 Il ne me rend rien.
 Puissiez-vous, contentes,
 Et sans mon secours,
 Passer d'heureux jours,
 Brebis innocentes,
 Brebis, mes amours !
 Que Pan vous défende :

Hélas ! il le fait ;
 Je ne lui demande
 Que ce seul bienfait.
 Oui, Brebis chéries,
 Qu'avec tant de soin
 J'ai toujours nourries ;
 Je prends à témoin
 Ces bois, ces prairies ;
 Que si les faveurs
 Du Dieu des pasteurs
 Vous gardent d'outrages,
 Et vous font avoir
 Du matin au soir
 De gras pâturages,
 J'en conserverai,
 Tant que je vivrai,
 La douce mémoire ;
 Et que mes chansons,
 En mille façons,
 Porterons la gloire
 Du rivage heureux,
 Où vif et pompeux,
 L'astre qui mesure
 Les nuits et les jours,
 Commencant son cours,
 Rend à la nature
 Toute la parure ;
 Jusqu'en ces climats,
 Où, sans doute las
 D'éclairer le monde,
 Il va chez Thétis
 Rallumer dans l'onde
 Ses feux amortis.

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FOR YOUNG LADIES AND GENTLEMEN WHO HAVE NOT COM-
 PLETED THEIR TWELFTH YEAR.

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